OSSD Scope & Sequence: Math 7

Scope & Sequence (S&S) is an overview of the skills and content covered in your curriculum at each class/instructional level. It provides an overview of the length of time (scope) and the order (sequence) in which key content will be taught.

Grade Level(s): 7
Content Area and/or Course Title: Course 2 Math

Unit Title	Time/Term	Focus Standards and Unit Outcomes
		Standards from the Vermont Content Areas, Mathematics, as presented by Carnegie Learning. ***Essential Standards are indicated in blue font.***
Thinking Proportionally	42 sessions	Circles and Ratio: In this topic, students develop formulas for the circumference and area of circles and use them to solve problems. They begin the topic by reviewing the terminology of circles. Students write ratios of the measures of the distance around and across different circles, noting that this ratio is constant. They learn that the irrational number π is the ratio of a circle's circumference and diameter lengths. Students use this relationship to write a formula for the circumference of a circle. They then decompose a circle and rearrange the pieces to form a familiar shape to derive the formula for a circle's area. Proportionality: In this topic, students begin by extending their work with rates to rates with fractional values. They then sort representations and classify relationships as linear or nonlinear and proportional or non-proportional. Students recall that in a proportional relationship, the graph is a straight line that passes through the origin and the table has constant ratios of corresponding values. They then use formal strategies to solve proportions. Students use inverse operations to solve for unknown values and discover that the product of the means equals the product of the extremes. Proportional Relationships: In this topic, students use their knowledge of proportionality to solve real-world problems about money. They solve various multistep ratio and percent problems, including tips, commissions, gratuities, simple interest, taxes, markups, and markdowns. 6.RP.1, 7.RP.1, 7.G.1, 7.G.4, 7.RP.2a, 7.RP.2b, 7.RP.2c, 7.RP.2d,

		7.RP.3, 7.EE.2, 7.G.6
Operating with Signed Numbers	19 sessions	Adding and Subtracting Rational Numbers: In this topic, students use number lines and two-color counters to model addition and subtraction of integers before developing rules for the sum and difference of signed numbers. They begin by walking a number line to visualize adding integers. Students transition from physical movement to modeling the motion on number lines. Multiplying and Dividing Rational Numbers: In this topic, students again use number lines and two-color counters to model the multiplication of integers before developing rules for the product of signed numbers 7.NS.1, 7.NS.1a, 7.NS.1b, 7.NS.1c, 7.NS.1d, 7.NS.3, 7.NS.2a, 7.NS.2b, 7.NS.2c, 7.NS.2d, 7.RP.3
Reasoning Algebraically	36 sessions	Two-Step Expressions and Equations: In this topic, students explore algebraic expressions with rational coefficients, building on their prior work with positive coefficients. They represent variable expressions on a number line and make connections between variable and numeric expressions. Students use their previous knowledge of evaluating expressions to verify the equivalence of expressions. Multiple Representations of Equations and Inequalities: In this topic, students apply the Distributive Property to rewrite equivalent expressions and solve equations by expanding and factoring them in various ways. 7.EE.1, 7.EE.3, 7.EE.2, 7.EE.4,
Analyzing Populations and Probabilities	25 sessions	Introduction to Probability: In this topic, students conduct simple experiments and determine theoretical and experimental probabilities of simple events. They use number cubes, coins, spinners, and marbles in a bag to calculate probabilities and learn the terminology of probability, including outcome, experiment, sample space, event, simple event, probability, complementary events, and equally likely. Compound Probability: In this topic, students build on their understanding of probability concepts from Introduction to Probability. They use arrays and lists to organize the possible outcomes of an experiment that includes two simple events. Students calculate experimental and theoretical probabilities of events and use proportional reasoning to determine percent error and to make predictions of expected numbers of outcomes. Drawing Inferences: In this topic, students explore the second component of the statistical process: data collection. They learn about samples, populations, censuses, parameters, and statistics. Students discuss the importance of representative samples, including random samples, to

		generalize the samples' populations. Students collect random and non-random samples using hands-on tools and simulation strategies and then use proportional reasoning to estimate the parameter of interest. They compute percent error and conclude that samples' statistics are more likely to represent the population's parameter when the sample is random. 7.RP.3, 7.SP.5, 7.SP.6, 7.SP.7, 7.SP.8c, 7.SP.8a, 7.SP.8b, 7.SP.1, 7.SP.2, 7.SP.4
Constructing and Measuring	20 sessions	<u>Angles and Triangles:</u> In this topic, students learn about formal constructions. They use patty paper and a compass and straightedge to duplicate segments and angles. <u>Three-Dimensional Figures:</u> In this topic, using clay, students explore cross-sections of right rectangular prisms and pyramids. These activities build their spatial sense and visualization abilities and help their see the additional connections between two- and three-dimensional objects. Next, they use nets of familiar right rectangular prisms and pyramids to discover that the volume of a pyramid is one-third the volume of the prism with the same base and height. 7.G.2, 7.G.5, 7.G.3, 7.G.6