Franklin Special School District
Grade 7 Mathematics
2022-2023

Course Syllabus

1st Quarter Standards/Objectives		
7.NS.A.1	**The Number System**	• Understand that the sum of a number and it opposite is zero in mathematical and real world situations. • Understand the relationship between addition and subtraction. • Represent $p + q$ as the number located a distance from p on a number line. • Subtract rational numbers by adding the additive inverse. • Use subtraction and absolute value to find the distance between two numbers on a number line. • Find the distance between two points on a coordinate plane that have either the same x- or y- value. • Add and subtract integers. • Represent addition and subtraction of integers on horizontal and/or vertical number lines. • Apply properties of operations to add and subtract integers. • Connect adding and subtraction positive and negative fractions to what students already know about adding and subtracting fractions and adding and subtracting integers. • Use a number line with easy fractions to connect to a distance model. • Add and subtract positive and negative proper fractions. • Add and subtract positive and negative improper fractions. • Add and subtract positive and negative mixed numbers.
7.NS.A.1a	**The Number System**	• Understand that the sum of a number and its opposite is zero in mathematical and real world situations.

1st Quarter Standards/Objectives		
7.NS.A.1b	**The Number System**	• Represent p + q (rational numbers) as the number located a distance |q| from p on a number line. • Show that a number and its opposite has a sum of zero (additive inverses). • Interpret sums of numbers in real world situations.
7.NS.A.1c	**The Number System**	• Subtract rational numbers by adding the additive inverse. • Find the distance between two points on a coordinate plane that have either the same x- or y- value. • Represent addition and subtraction of integers on a horizontal and/or vertical number lines.
7.NS.A.1d	**The Number System**	• Add and subtract integers. • Add and subtract positive and negative proper fractions and decimals.

	1st Quarter Standards/Objectives	
7.NS.A.2	The Number System	• Develop rules for multiplying and dividing integers using patterns. • Identify equivalent numbers to show that $-(\frac{p}{q}) = (\frac{-p}{q}) = (\frac{p}{-q})$ (using numbers, not variables. • Multiply and divide integers resulting in integer answers. • Convert a positive proper fraction to a terminating decimal. • Convert a positive improper fraction to a whole number decimal using long division. • Convert a positive proper fraction to a repeating decimal; use symbols for repeating decimals. • Convert positive proper and improper fractions to repeating and non-repeating decimals. • Connect multiplying and dividing positive and negative fractions to what students already know about multiplying and dividing fractions and multiplying and dividing integers. • Multiply and divide rational numbers, with a focus on positive and negative proper and improper fractions, but also including multiplying and dividing integers by fractions and fractions by integers. • Interpret products and quotients of rational numbers by describing real-world contexts.
7.NS.A.2a	The Number System	• Multiply integers resulting in integer answers. • Connect multiplying positive and negative fractions to what students already know about multiplying fractions and multiplying and dividing integers. • Multiply rational numbers, with a focus on positive and negative proper and improper fractions, but also including multiplying and dividing integers by fractions and fractions by integers.

Franklin Special School District
Grade 7 Mathematics
2022-2023

1st Quarter Standards/Objectives		
7.NS.A.2b	**The Number System**	- Identify equivalent numbers to show that $-(\frac{p}{q}) = (\frac{-p}{q}) = (\frac{p}{-q})$ (using numbers, not variables. - Divide integers resulting in integer answers. - Connect dividing positive and negative fractions to what students already know about multiplying and dividing fractions and multiplying and dividing integers. - Divide rational numbers, with a focus on positive and negative proper and improper fractions, but also including multiplying and dividing integers by fractions and fractions by integers.
7.NS.A.2c	**The Number System**	Interpret products and quotients of rational numbers by describing real-world contexts.
7.NS.A.2d	**The Number System**	- Convert a positive proper fraction to a terminating decimal. - Convert a positive improper fraction to a whole number decimal using long division. - Convert a positive proper fraction to a repeating decimal; use symbols for repeating decimals. - Convert positive proper and improper fractions to repeating and non-repeating decimals.
7.NS.A.3	**The Number System**	- Solve problems involving negative integers and complex fractions. - Use whole-number approximations to estimate, and then compare the estimate to the actual result of computation. - Connect previous one-step solving to solving equations with positive and negative fractions. - Connect previous equation-solving to solving equations with positive and negative decimals.
7.EE.B.3	**Expressions and Equations**	- Solve problems involving rational numbers. - Convert among fractions, decimals, and percents as needed to solve the problems. - Simplify expressions by applying distributive property using rational numbers.

1st Quarter Standards/Objectives		
7.EE.B.3a	**Expressions and Equations**	• Solve problems involving rational numbers. • Convert among fraction, decimals, and percents a s needed to solve the problems. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = $ r, where p, q, and r are integers, fractions, or decimals.
Topics covered: • Understand Addition of Positive and Negative Integers • Understand Subtraction of Positive and Negative Integers • Add and Subtract Positive and Negative Numbers • Multiply and Divide Positive and Negative Numbers • Terminating and Repeating Decimals • Multiply and Divide Rational	**Major assignments:** 1) Add Subtract Rational Numbers Assessment 2) Multiply Divide Rational Numbers Assessment	
Notes:		

	2nd Quarter Standards/Objectives:	
7.RP.A.1	**Ratios and Proportional Relationships**	• Compute unit rates involving ratios with a fraction in the denominator. • Compute unit rates involving ratios with a fraction in the numerator. • Compute unit rates involving ratios with fractions in both the numerator and denominator.
7.RP.A.2	**Ratios and Proportional Relationships**	• Determine whether two quantities are in a proportional relationship by looking at values in a table, a line in the coordinate plane, and an equation. (Use equivalent fraction relationships and multiplication/division to find proportional ratios.) • Identify the constant of proportionality (unit rate) in a table and when represented by an equation. • Given a situation, represent proportional relationships by equations.
7.RP.A.2a	**Ratios and Proportional Relationships**	• Determine whether two quantities are in a proportional relationship by looking at values in a table, a line in the coordinate plane, and an equation. (Use equivalent fraction relationships and multiplication/division to find proportional ratios.) • Determine whether two quantities are in a proportional relationship by looking at values in a table, a line in the coordinate plane, and an equation. (Use equivalent fraction relationships and multiplication/division to find proportional ratios.)
7.RP.A.2b	**Ratios and Proportional Relationships**	• Identify the constant of proportionality (unit rate) in a table and when represented by an equation.
7.RP.A.2c	**Ratios and Proportional Relationships**	• Given a situation, represent proportional relationships by equations.

	2nd Quarter Standards/Objectives:	

	2nd Quarter Standards/Objectives:	
7.RP.A.2d	**Ratios and Proportional Relationships**	• Represent proportional relationships by equations. • Graph proportional equations representing real-world situations on a coordinate grid. • Explain what a given point (*x*,*y*) on the graph of the equation of a proportional relationship means in terms of a real-world situation.
7.RP.A.3	**Ratios and Proportional Relationships**	• Set up and solve multi-step simple interest problems. • Set up and solve multi-step simple tax problems. • Set up and solve multi-step problems involving markups and markdowns. • Set up and solve multi-step problems involving gratuities, commissions, and fees. • Set up and solve multi-step problems involving percent increase and decrease. • Set up and solve multi-step problems involving percent error.
7.EE.A.2	**Expressions and Equations**	• Rewrite expressions in different forms to better understand relationships within contexts. For example, a 25% discount can be written as $P = 0.75$ or $P = C - 0.25C$.
7.G.A.1	**Geometry**	• Understand that a scale is a ratio. • Compute actual lengths from a scale drawing involving geometric figures. • Compute actual areas from a scale drawing involving geometric figures. • Reproduce a scale drawing using a different scale. • Determine the scale of a drawing given the ratios of lengths and areas in the drawing and the actual dimensions.

Franklin Special School District
Grade 7 Mathematics
2022-2023

2nd Quarter Standards/Objectives:		
7.SP.C.5	**Statistics and Probability**	• Understand that probability of a chance event is between 0 and 1, with 0 being impossible, close to zero being unlikely, close to ½ being neither unlikely nor likely, near 1 being likely, and 1 being certain. • Represent the likelihood of an event on a number line. • Determine if the probability of an event is closer to 0 or to 1 for a given situation. • Determine if the event is impossible, unlikely, equally likely, very likely, or certain for a given event. • Connect probabilities of 0, ¼, ½, ¾, and 1 to equivalent decimal and percent representations.
7.SP.C.6	**Statistics and Probability**	• Perform an experiment multiple times (pulling a colored marble out of a bag or rolling a number cube) to gather data for a number of outcomes and calculate the experimental probability. • Calculate the experimental probability of an event using the combined data of many groups then compare this probability to the individual probabilities. • Describe some reasons why the experimental groups might be different. • Describe the probability you would expect for 1,000 outcomes or 10,000 outcomes. (Begin to introduce the idea of theoretical probability informally • Make a conjecture about the outcome of a similar experiment with different numbers (for example, 50 marble pulls with replacement for 3 green marbles, 6 blue marbles, and 3 blue marbles.) Students try their experiment and compare their predictions to the experimental outcomes to explore and refine conjectures about theoretical probability.

2nd Quarter Standards/Objectives:		
7.SP.C.7	**Statistics and Probability**	• Find theoretical probabilities using real-world situations. • Develop a uniform probability model and use the model to determine the probability of events. • Develop a probability model and use the model to determine probabilities of events. • Compare the predicted probabilities to experimental results and explain possible discrepancies.
7.SP.C.7a	**Statistics and Probability**	• Develop a probability model and use the model to determine probabilities of events.
7.SP.C.7b	**Statistics and Probability**	• Develop a uniform probability model and use the model to determine the probability of events. • Compare the predicted probabilities to experimental results and explain possible discrepancies.

Topics covered:	Major assignments:
• Scale Drawings • Ratios Involving Complex Fractions • Understand Proportional Relationships • Equations for Proportional Relationships • Problem Solving with Proportional Relationships • Proportional Relationships • Writing Linear Expressions • Understand Probability Concepts • Experimental Probability • Probability Models	1) Unit rates, Complex Fractions, and Scale Drawings 2) Proportional Relationships (not percents) Percents

Franklin Special School District
Grade 7 Mathematics
2022-2023

2nd Quarter Standards/Objectives:
Notes:

3rd Quarter Standards/Objectives:		
7.EE.A.1	**Expressions and Equations**	• Add and subtract linear expressions with fractional and decimal coefficients by combining like terms. • Simplify expressions that include the distributive property, multiple variable terms, and negative numbers. • Apply properties of simplifying expressions to contexts such as perimeters and areas of triangles and rectangles. • Determine whether two expressions are equivalent. • Write equivalent expressions for linear expressions.
7.EE.B.3	**Expressions and Equations**	• Solve problems involving rational numbers. • Convert among fractions, decimals, and percents as needed to solve the problems. • Simplify expression by applying the distributive property using rational numbers.

3rd Quarter Standards/Objectives:		
7.EE.B.3a	**Expressions and Equations**	• Solve problems involving rational numbers. • Convert among fractions, decimals, and percents as needed to solve the problems. • Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are integers, fractions, or decimals. • Apply the distributive property using rational numbers.
7.EE.B.3b	**Expressions and Equations**	• Determine the reasonableness of answers and estimations.
7.EE.B.4	**Expressions and Equations**	• Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are integers, fractions, or decimals. • Solve using estimates for the fractions and decimals first to get an estimated solution. • Compare and interpret the solution set of an equation. • Write and solve real-life inequalities that lead to the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are integers, fractions, or decimals. • Graph and interpret the solution set of an equation.
7.EE.B.4a	**Expressions and Equations**	• Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are integers, fractions, or decimals. • Graph and interpret the solution set of an equation. • Graph and interpret the solution set of an inequality.
7.EE.B.4b	**Expressions and Equations**	• Solve word problems leading to inequalities of the form px + q = r and • p(x + q) = r, where p,q and r are integers, fractions, or decimals • Graph and interpret the solution set of an inequality.

3rd Quarter Standards/Objectives:

7.GB.4	Geometry	• Write equations to find unknown angle measures using properties of supplementary and complementary angles. • Write equations to find unknown angle measures using properties of vertical angles. • Write equations to find unknown angle measures using properties of adjacent angles. • Write equations to find unknown angles in more complex figures combining supplementary, complementary, vertical, and adjacent angles.

Topics covered: ● Equivalent Linear Expressions ● Solve Problems with Equations ● Solve Problems with Inequalities ● Problem Solving with Angles	**Major assignments:** 1) Equivalent Expressions 2) Two-Step Equations and Inequalities 3) Multi-Step Equations

Notes:

4th Quarter Standards/Objectives:

7.G.A.2	Geometry	• Construct triangles given angle measure, side lengths, or congruence. • Determine whether or not it is possible to draw a triangle with given characteristics. If so, draw the triangle. If not, explain why it is not possible. • Determine whether a triangle is unique, if you can draw more than one variety of that triangle, or in no such triangle exists. • Draw a quadrilateral when give a description of side lengths and angle measures.

	4th Quarter Standards/Objectives:	
7.G.B.3	Geometry	• Understand the relationship between the radius and the diameter of a circle. • Understand that the ration of the circumference of a circle to its diameter can be expressed as pi. • Discover an expression for the area of a circle using the area of a parallelogram. • Solve real-world problems involving the circumference of a circle and the area of a circle.
7.G.B.5	Geometry	• Find the areas of two-dimensional objects composed of triangles, quadrilaterals, and polygons. • Apply formulas to solve real-world and mathematical problems. • Find the volumes of cubes and right prisms by multiplying the area of the base by the height. (Focus on $V = Bh$, not l x w x h.) • Find the volume of cubes and right prisms in real-world situations. • Use two-dimensional formulas to calculate surface areas of cubes and right prisms.
7.SP.A.1	Statistics and Probability	• Understand that a representative sample can be used to make predictions about large populations. • Describe different ways of finding a sample and determine which sample is the most representative of a given population. • Create a representative sample and use it to make predictions about a population.
7.SP.A.2	Statistics and Probability	• Use data from two samples to write ratios that can be easily used to make an estimate about a population. • Compare estimates made from multiple samples of the same size to gauge the variation in the estimates. • Predict the accuracy of the estimates made by various samples.
7.SP.B.3	Statistics and Probability	• Use visual representations, such as dot plots, to compare two real-world numerical sets with similar differing variabilities.

	4th Quarter Standards/Objectives:	
		• Compare data sets and measure the difference between the centers. • Represent the difference between centers of data sets by using the mean. • Describe the variation in data sets.
7.SP.B.4	**Statistics and Probability**	• Use data gathered from two populations to compare the mean, median, and mode. • Describe which measure of center is the best to represent data. • Use data gathered from two populations to compare the measures of variability including range and interquartile range.
7.SP.D.8	**Statistics and Probability**	• Describe data using the mean and median. • Examine the effect of an outlier on the mean and median of a set of data. • Analyze a set of data using the interquartile range. • Solve problems using measures of center and variability.
7.SP.D.8a	**Statistics and Probability**	• Describe data using the mean and median. • Examine the effect of an outlier on the mean and median of a set of data. • Find and compare measures of center (mean/median) and measures of variability (range, interquartile range) between two or more groups of data.
7.SP.D.8b	**Statistics and Probability**	• Analyze a set of data using the interquartile range. • Solve problems using measures of center and variability.

Franklin Special School District
Grade 7 Mathematics
2022-2023

4th Quarter Standards/Objectives:	
Topics covered: • Understanding Conditions for Drawing Triangles • Aras and Circumference of a Circle • Area of Composed Figures • Volume of Solids • Surface Area of Solids • Understand Random Samples • Making Statistical Inferences • Find Measure of Center and Variability • Summarize Data Sets	**Major assignments:** 1) Area and Circumference of Circles 2) Area of Composite Figures 3) Volume and Surface Area 4) Volume and Surface Area of Composed Figures

Notes:

Procedures for Parental Access for Instructional Materials:

1) Many instructional materials can be accessed digitally via the FSSD website (fssd.org) using your student's unique username and password.
a. Student Resources : FSSD website > Parents & Students > Parent Information > Online Resources > Student
b. Parent Resources: FSSD website > Parents & Students > Parent Information > Online Resources > Parent

2) If additional information is needed regarding instructional materials, a written request may be submitted to your child's teacher. Instructional material review is included in Board Policy 4.400.