HILLSBOROUGH TOWNSHIP SCHOOL DISTRICT

MATHEMATICS CURRICULUM

Grade 6

July, 2020

Course Overview
Grade 6

The grade six mathematics program emphasizes the following content clusters as they align with the grade six New Jersey Student Learning Standards adopted by the state of New Jersey: ratios and proportional relationships, the number system, expressions and equations, geometry, and statistics and probability. The content is presented using a problem solving approach designed to develop critical thinking skills within real world situations. The New Jersey Student Learning Standards for Mathematical Practice: make sense of problems and persevere in solving them; reason abstractly and quantitatively; construct viable arguments and critique the reasoning of others; model with mathematics, use appropriate tools strategically; attend to precision; look for and make use of structure; and look for and express regularity in repeated reasoning are embedded in the daily teaching and learning. Practice of basic skills is ongoing through a variety of routines and activities. Topics are revisited regularly and practice is distributed over time to facilitate full concept development. Activities explore a wide variety of content with opportunities for students to apply basic skills to geometry, fractions, decimals, percents, measurement, statistics, and algebra. Program implementation and assessment offer enrichment and reinforcement based on individual student needs. The grade six mathematics program prepares students to take the New Jersey Student Learning Assessment (NJSLA) or any next generation assessment. Successful completion of the sixth grade mathematics program prepares students for entry into the seventh grade mathematics program.

Hillsborough Township Public Schools
Grade 6 Mathematics Curriculum

Unit Title: Unit 1 Numerical Expressions and Factors	**Timeframe/Pacing:** 17 days

Essential Questions
- How are factors and multiples related?
- What are expressions and how can they be evaluated?

Enduring Understandings
- Factors break numbers down and are finite. Multiples are infinite.
- Expressions are mathematical statements without an equal sign and can be evaluated using order of operations
- Numeric fluency includes both the understanding of and the ability to appropriately use numbers.

Standards Taught and Assessed

■ Major Cluster

- 6.EE.A.1 Write and evaluate numerical expressions involving whole-number exponents.

◎ Additional Cluster

- 6.NS.B.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. For example, express 36 + 8 as 4 (9 + 2).

Highlighted Interdisciplinary Connections
- 8.1.8.DA.5: Test, analyze, and refine computational models

Highlighted Career Ready Practices and 21st Century Themes and Skill
- 9.3.ST.2 - Use technology to acquire, manipulate, analyze and report data.

Social Emotional Learning Competencies
- 2.1.8.EH.1: Compare and contrast stress management strategies that are used to address various types of stress-induced situations (e.g., academics, family, personal relationships, finances, celebrations, violence).
- 2.1.8.EH.2: Analyze how personal attributes, resiliency, and protective factors support mental and emotional health.

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

Pre-Assessment • 6.EE.A.1 • 6.NS.B.4		**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)** • Peer support, challenge work, individual instruction, vocabulary flash cards, and specific other accommodations/modifications per a student's IEP or 504 plan.		
Student Learning Objectives: We are learning to/that...	**Student Strategies (Mathematical Practices)**	**Formative Assessment**	**Activities and Resources**	**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)**
■ 6.EE.A.1 - Write and evaluate expressions involving exponents.	SMP7 - Look for and make use of structure.	Write 4^3 in expanded form. Write 5 * 5 * 5 in exponential form.	Student Journal Graphic Organizer Games Tutorial Example: Writing Expressions as Powers Tutorial Example: Finding Values of Powers Tutorial Example: Modeling with Real Life	Nested parentheses Turn and Talk Linking cubes or color tile pieces Grid paper Specific other accommodations/modifications per a student's IEP or 504 plan
■ 6.EE.A.1 - Write and evaluate numerical expressions using the order of operations.	SMP 3 - Construct viable arguments and critique the reasoning of others.	Evaluate the expression: $8 \div (6 - 4) + 3^2$	Student Journal Graphic Organizer Games Tutorial Example: Order of Operations with Exponents Tutorial Example: Modeling with Real Life	Nested parentheses Turn and Talk Linking cubes or color tile pieces Grid paperSpecific other accommodations/modifications per a student's IEP or 504 plan

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

◎6.NS.B.4 Write a number as a product of prime factors and represent the product using exponents.	MP 2 Reason abstractly and quantitatively.	Determine the prime factorization of 75 & 140.	Student Journal Graphic Organizer Games Tutorial Example: Finding Factor Pairs Tutorial Example: Writing Prime Factorization	Successive Division Turn and Talk Calculator Prime number chart Specific other accommodations/modifications per a student's IEP or 504 plan
◎6.NS.B.4 Find the greatest common factor of two numbers.	MP 5 Use appropriate tools strategically.	Discover the GCF of 18, 72, 144.	Student Journal Graphic Organizer Games Tutorial Example: Finding GCF Tutorial Example: Modeling with Real Life	Successive Division More than two numbers Turn and Talk 100's chart Multiplication chart Specific other accommodations/modifications per a student's IEP or 504 plan
◎6.NS.B.4 Find the least common multiple of two numbers.	MP 3 - Construct viable arguments and critique the reasoning of others.	Write two numbers such that 18 and 30 are multiples of each. Justify your answer.	Student Journal Graphic Organizer Tutorial Example: Finding LCM Tutorial Example: Modeling with Real Life	Successive Division More than two numbers Turn and Talk More than two numbers 100's chart Multiplication chart Specific other accommodations/modifications per a student's IEP or

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

				504 plan
Benchmark Assessment • Benchmark 1		**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)** • Extended time, scribe, speech to text, challenge/scaffold questions, and specific other accommodations/modifications per a student's IEP or 504 plan.		
Summative Assessment(s) • Unit 1 Check-in 1: Expressions and Operations (6.EE.A.1) • Unit 1 Check-in 2: GCF and LCM (6.NS.B.4) • Performance Task 1		**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)** • Extended time, scribe, speech to text, challenge/scaffold questions, multiplication chart or calculator as needed, highlight keywords, multilingual glossary, and specific other accommodations/modifications per a student's IEP or 504 plan.		

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

Hillsborough Township Public Schools
Grade 6 Mathematics Curriculum

Unit Title: Unit 2 Fractions and Decimals	**Timeframe/Pacing:** 20 days

Essential Questions

- How can computational strategies be applied to practical situations?

Enduring Understandings

- Computational fluency includes understanding the meaning and the appropriate use in given situations.

Standards Taught and Assessed

■ Major Cluster

- 6.NS.A.1 Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc). How much chocolate will each person get if 3 people share 1/2 lb. of chocolate equally? How many 3/4- cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area ½ square mi?

◎ Additional Cluster

- 6.NS.B.2 Fluently divide multi-digit numbers using the standard algorithm.
- 6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

Highlighted Interdisciplinary Connections

- SL.6.1.B - Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.

Highlighted Career Ready Practices and 21st Century Themes and Skill

- 9.1.12.B.3 - Construct a plan to accumulate emergency "rainy day" funds.

Social Emotional Learning Competencies

- 2.1.8.EH.1: Compare and contrast stress management strategies that are used to address various types of stress-induced situations (e.g., academics, family, personal relationships, finances, celebrations, violence).
- 2.1.8.EH.2: Analyze how personal attributes, resiliency, and protective factors support mental and emotional health.

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

Hillsborough Township Public Schools
Grade 6 Mathematics Curriculum

Pre-Assessment • 6.NS.B.2 • 6.NS.A.1		**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)** • Peer support, challenge work, individual instruction, vocabulary flash cards, and specific other accommodations/modifications per a student's IEP or 504 plan. • Review & reinforcement of addition and subtraction of fractions and mixed numbers.		
Student Learning Objectives: We are learning to/that...	**Student Strategies (Mathematical Practices)**	**Formative Assessment**	**Activities and Resources**	**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)**
■ 6.NS.A.1 Find products involving fractions and mixed numbers.	SMP 2 - Reason abstractly and quantitatively	1 ½ * 2 ⅔ ⅗ * ⅜	Graphic Organizer Games Student Journal Tutorial Example: Multiplying Fractions and Mixed Number Tutorial Example: Multiplying Mixed Numbers Tutorial Example: Modeling with Real Life	Area Models Fraction Bars Fractional tiles (electronic) Grid Paper Specific other accommodations/modifications per a student's IEP or 504 plan
■ 6.NS.A.1 Compute quotients of fractions and solve problems involving division by fractions.	MP3 - Construct Viable Arguments and Critique the Reasoning of Others	4 ÷ ⅔ ⅚ ÷ 4	Graphic Organizer Games Student Journal Tutorial Example: Writing Reciprocals Tutorial Example: Dividing Fractions Tutorial Example: Modeling with Real Life	Area Models Fraction Bars Fractional tiles (electronic) Grid Paper Specific other accommodations/modifications per a student's IEP or 504 plan

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

■ 6.NS.A.1 Compute quotients with mixed numbers and solve problems involving division with mixed numbers.	SMP 1 - Make sense of problems and persevere in solving them.	2 ¼ ÷ ¾ ⅞ ÷ 3 1/16 A bag contains 42 cups of dog food. Your dog eats 2 ⅓ cups of dog food each day. Is there enough food to last 3 weeks? Explain.	Graphic Organizer Games Student Journal Tutorial Example: Dividing Mixed Numbers Tutorial Example: Modeling with Real Life	Area Models Fraction Bars Fractional tiles (electronic) Grid Paper Specific other accommodations/modifications per a student's IEP or 504 plan
◎ 6.NS.B.3 Add and subtract decimals and solve problems involving addition and subtraction of decimals.	SMP 7 - Look for and Make use of structure	16.05 + 2.945 5.508 - 3.174 Store 1: $18.25 Store 2: $19.89 How much more does it cost at Store 2?	Graphic Organizer Games Student Journal Tutorial Example: Adding and Subtracting Decimals Tutorial Example: Modeling with Real Life	10 by 10 grid Base ten blocks Grid Paper Specific other accommodations/modifications per a student's IEP or 504 plan
◎ 6.NS.B.3 Multiply decimals and solve problems involving multiplication of decimals.	SMP 6 - Attend to precision	If you know 12 x 24 = 288, how can you find 0.12 x 0.24? You earn $9.15 per hour painting a fence. It takes 6.75 hours to paint the fence. Do you have enough money to buy a jersey that cost $59.99? If so, how much money do you have left? If not, how much money do you still need?	Graphic Organizer Games Student Journal Tutorial Example: Multiplying Decimals Tutorial Example: Modeling with Real Life	10 by 10 grid Base ten blocks Graph Paper Bar Models Specific other accommodations/modifications per a student's IEP or 504 plan

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◎ 6.NS.B.2 Divide whole numbers and solve problems involving division of whole numbers.	SMP1 - Make sense of problems and persevere in solving them.	582 / 3 In a movie's opening weekend, 879,575 tickets were sold in 755 theaters. The average cost of a ticket is $9.50. What is the average amount of money earned by each theater?	Graphic Organizer Games Student Journal Tutorial Example: Dividing Whole Numbers Tutorial Example: Modeling with Real Life	10 by 10 grid Base ten blocks Graph Paper Bar Models Calculator Specific other accommodations/modifications per a student's IEP or 504 plan
◎ 6.NS.B.3 Divide decimals and solve problems involving division of decimals.	SMP1 - Make sense of problems and persevere in solving them.	14.4 / 1.2 A magazine subscription cost $29.88 for 12 issues or $15.24 for 6 issues. What subscription costs more per issue? How much more?	Graphic Organizer Games Student Journal Tutorial Example: Dividing Decimals Tutorial Example: Model with Real Life	Graph Paper Bar Models Specific other accommodations/modifications per a student's IEP or 504 plan

Benchmark Assessment

- Quarterly 1 (Units 1 & 2)
  [6.NS.A.1 6.EE.A.1 6.NS.B.4 6.NS.B.3]

Summative Assessment(s)

- Unit 2 Check-in 1: Fraction Operations (6.NS.A.1)
- Unit 2 Check-in 2: Decimal Operations-Addition and Subtraction (6.NS.B.3)
- Unit 2 Check-in 3: Decimal Operations-Multiplication and Division (6.NS.B.3)
- Performance Task 2

Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)

Extended time, scribe, speech to text, challenge/scaffold questions, multiplication chart or calculator as needed, highlight keywords, multilingual glossary, and specific other accommodations/modifications per a student's IEP or 504 plan.

Key: ■ Major Cluster ☐ Supporting Cluster ◎ Additional Cluster

Hillsborough Township Public Schools
Grade 6 Mathematics Curriculum

Unit Title: Unit 3 Ratios and Rates	**Timeframe/Pacing:** 24 days

Essential Questions

- How can ratios and proportional relationships be used to determine unknown quantities?

Enduring Understandings

- Ratios and proportional relationships are used to express how quantities are related and how quantities relation to each other.

Standards Taught and Assessed

■ Major Cluster

- **6.RP.A.1** Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."
- **6.RP.A.2** Understand the concept of a unit rate a/b associated with a ratio a:b with b $\neq$0, and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."
- **6.RP.A.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. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?
  d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Highlighted Interdisciplinary Connections

- MS-ESS1-3 Analyze and interpret data to determine scale properties of objects in the solar system.

Highlighted Career Ready Practices and 21st Century Themes and Skill

- 9.1.8.CP.1: Compare prices for the same goods or services.

Social Emotional Learning Competencies

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

- 2.1.8.EH.1: Compare and contrast stress management strategies that are used to address various types of stress-induced situations (e.g., academics, family, personal relationships, finances, celebrations, violence).
- 2.1.8.EH.2: Analyze how personal attributes, resiliency, and protective factors support mental and emotional health.

Pre-Assessment • 6.RP.A.1 • 6.RP.A.2 • 6.RP.A.3	**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)** • Peer support, challenge work, individual instruction, vocabulary flash cards, and specific other accommodations/modifications per a student's IEP or 504 plan.

Student Learning Objectives: We are learning to/that...	**Student Strategies (Mathematical Practices)**	**Formative Assessment**	**Activities and Resources**	**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)**
■ **6.RP.A.1** Understand the concepts of ratios and equivalent ratios.	SMP 2 Reason abstractly and quantitatively	Write a ratio equivalent to 3:4 Simplify the ratio 18 to 24	Graphic Organizer Games Student Journal Tutorial Example: Writing and Interpreting Ratios Tutorial Example: Determining Equivalent Ratios Tutorial Example: Modeling with Real Life	Introduction to simple proportions, factor chart, color tiles, linking cubes, tape diagrams, specific other accommodations and/or modifications per a student's IEP or 504 plan
■ **6.RP.A.3** Use tape diagrams to model and solve ratio problems.	SMP 3 Construct viable arguments and critique the reasoning of others	You have $40 for a video game and your parents will contribute some money. The tape diagram represents the amounts of money. How much money	Graphic Organizer Games Student Journal Tutorial Example: Using a Tape Diagram Tutorial Example:	Tape diagrams, number lines, double number line, calculator, specific other accommodations and/or modifications per a student's IEP or 504 plan

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

		will your parents contribute? 	Modeling with Real Life	
■ **6.RP.A.3** Use ratio tables to represent equivalent ratios and solve ratio problems.	SMP 2 Reason abstractly and quantitatively	Complete the ratio table: Triangles: 1, 2, , 4 Sides: 3, , 9, A bag contains green tokens and black tokens. There are 8 green tokens in the bag. The ratio of green tokens to black tokens is 4 for every 1. Find the number of black tokens in the bag.	Graphic Organizer Games Student Journal Tutorial Example: Ratio Tables Tutorial Example: Model with Real Life	Calculator, tape diagram, simple proportion, challenge problems, think-pair-share, specific other accommodations and/or modifications per a student's IEP or 504 plan
■ **6.RP.A.3** Represent ratio relationships in a coordinate plane.	SMP4 Model with mathematics	Represent the ratio relationship using a graph. Cashews (pounds): 1, 2, 3 Cost (dollars): 12.5, 25, 37.5	Graphic Organizer Games Student Journal Tutorial Example: Graphing a Ratio Problem Tutorial Example: Model with Real Life	Ruler/straight edge, rules for Graphing, specific other accommodations and/or modifications per a student's IEP or 504 plan
■ **6.RP.A.2** Understand the concept of a unit rate and solve rate problems.	SMP 6 Attend to precision	You buy 10 pounds of bird seed at Store A for $11.50. Your friend buys 15	Graphic Organizer Games Student Journal	Calculator, tape diagram, simple proportion, challenge problems,

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

		pounds of bird seed at store B for $19.50. How much less would you spend by buying 20 pounds of bird seed at the store with the better deal? Determine the Unit Rate: 5 revolutions in 50 seconds.	Tutorial Example:Finding Unit Rates Tutorial Example: Model with Real Life	think-pair-share, specific other accommodations and/or modifications per a student's IEP or 504 plan
■ **6.RP.A.2** Use ratio reasoning to convert units of measure.	SMP 4 Model with mathematics	Will all of the water from a full two-liter bottle fit into a two-quart pitcher? Explain. Convert 5 inches to centimeters.	Graphic Organizer Games Student Journal Tutorial Examples: Using Conversion Factors Tutorial Examples: Modeling with Real Life	alculator, tape diagram, simple proportion, challenge problems, think-pair-share, liquid measurement tools (The big "G"), linear measurement tools, specific other accommodations and/or modifications per a student's IEP or 504 plan and/or modifications per a student's IEP or 504 plan
Benchmark Assessment • Not applicable		**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)**		

Key: ■ Major Cluster ☐ Supporting Cluster ◎ Additional Cluster

Summative Assessment(s) • Unit 3 Check-in 1: Ratios (6.RP.A.1, 6.RP.A.3) • Unit 3 Check-in 2: Graphing and Unit Rates (6.RP.A.2, 6.RP.A.3a, 6.RP.A.3b) • Unit 3 Check-in 3: Converting Measures (6.RP.A.3d) • Performance Task 3	• Extended time, scribe, speech to text, challenge/scaffold questions, multiplication chart or calculator as needed, highlight keywords, multilingual glossary, and specific other accommodations/modifications per a student's IEP or 504 plan.

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

Hillsborough Township Public Schools
Grade 6 Mathematics Curriculum

Unit Title: Unit 4 Percents	**Timeframe/Pacing:** 16 days

Essential Questions

- What is the relationship between fractions, decimals, and percents?
- How can computational strategies be applied to practical situations?

Enduring Understandings

- One representation may sometimes be more helpful than another; used together, multiple representations give a fuller understanding of a problem.
- Computational fluency includes understanding the meaning and the appropriate use in given situations.

Standards Taught and Assessed

■ Major Cluster

- **6.RP.A.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

- **6.NS.C.7** Understand ordering and absolute value of rational numbers.
  a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret -3 > -7 as a statement that -3 is located to the right of -7 on a number line oriented from left to right.
  b.Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write –3 degrees C > –7 degrees C to express the fact that –3 degrees C is warmer than –7 degrees C.

Highlighted Interdisciplinary Connections

- **MS-LS3-1** Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.

Highlighted Career Ready Practices and 21st Century Themes and Skill

- 9.1.8.EG.1: Explain how taxes affect disposable income and the difference between net and gross income
- 9.1.8.EG.2: Explain why various sources of income are taxed differently

Key: ■ Major Cluster ☐ Supporting Cluster ◎ Additional Cluster

Social Emotional Learning Competencies

- 2.1.8.EH.1: Compare and contrast stress management strategies that are used to address various types of stress-induced situations (e.g., academics, family, personal relationships, finances, celebrations, violence).
- 2.1.8.EH.2: Analyze how personal attributes, resiliency, and protective factors support mental and emotional health.

Pre-Assessment

- 6.NS.C.7
- 6.RP.A.3

Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)

- Peer support, challenge work, individual instruction, vocabulary flash cards, and specific other accommodations/modifications per a student's IEP or 504 plan.

Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
■ **6.RP.A.3** Write percents as fractions and fractions as percents.	SMP 2 Reason abstractly and quantitatively	Write the percent as a fraction or mixed number in simplest form: 45% 224% 0.4% Write the fraction or mixed number as a percent: 1/10 11/20 1 ⅕	Graphic Organizer Games Student Journal Tutorial Example: Percents as Fractions Tutorial Example: Fractions as Percents Tutorial Example: Model with Real Life	Fraction/decimal/percent chart, fraction/percent circles, tape diagrams, equivalent fractions, double number lines, specific other accommodations/modifications per a student's IEP or 504 plan

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

■ **6.RP.A.3** Write percents as decimals and decimals as percents.	SMP 2 Reason abstractly and quantitatively	Write each percent as a decimal: 78% 91.25% 0.06% Write the decimal as a percent: 0.52 3.68 0.002	Graphic Organizer Games Student Journal Tutorial Example: Percents as Decimals Tutorial Example: Decimals as Percents Tutorial Example: Model with Real Life	Fraction/decimal/percent chart, tape diagrams, base ten blocks, 10 x 10 grid, specific other accommodations/modifications per a student's IEP or 504 plan
■ **6.NS.C.7** Compare and order fractions, decimals, and percents.	SMP 2 Reason abstractly and quantitatively	Order the numbers from least to greatest: 38%, 8/25, 0.41 Order the animals by sleep time from least to greatest: Animal / Portion of Day Sleeping Dolphin: 0.433 Lion: 56.3% Rabbit: 19/40 Squirrel: 31/50 Tiger: 65.8%	Graphic Organizer Games Student Journal Tutorial Example: Comparing Fractions, Decimals, and Percents Tutorial Example: Ordering Fractions, Decimals, and Percents Tutorial Example: Model with Real Life	Number line, calculator, FDP chart, fraction/percent circles. base ten blocks, 10 x 10 grid, specific other accommodations/modifications per a student's IEP or 504 plan
■ **6.RP.A.3** Find a percent of a quantity and solve percent problems.	SMP 1 Make sense of problems and persevere to solve them	You raised $420 during an event. The amount of money you raised is 120% of your goal. How much money was your goal? A shirt is on sale for 60% off the original price. If the	Graphic Organizer Games Student Journal Tutorial Example: Finding the Percent of Number Tutorial Example: Finding the Whole	Tape diagram, calculator, equivalent fractions ratio table, fraction/percent bar, specific other accommodations/modifications per a student's IEP or 504 plan

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

		original price is $28, how much is the sale price? You have a meal at a restaurant. The sales tax is 8% and the 20% tip is on the pretax price. If the original bill is $53.04, how much is total after tax and tip?	Tutorial Example: Model with Real Life	
Benchmark Assessment • Benchmark 2		**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)** • Extended time, scribe, speech to text, challenge/scaffold questions, multiplication chart or calculator as needed, highlight keywords, multilingual glossary, and specific other accommodations/modifications per a student's IEP or 504 plan.		
Summative Assessment(s) • Unit 4 Check-In 1: Fraction-Decimal-Percents (6.NS.C.7) • Unit 4 Check-In 2: Percents (6.RP.A.3) • Performance Task 4				

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

Hillsborough Township Public Schools
Grade 6 Mathematics Curriculum

Unit Title: Unit 5 Algebraic Expressions and Properties	**Timeframe/Pacing:** 20 days

Essential Questions

- How can algebraic representations be used to generalize patterns and relationships?

Enduring Understandings

- The symbolic language of algebra is used to communicate and generalize the patterns in mathematics.

Standards Taught and Assessed

■ Major Cluster

- **6.EE.A.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. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas V = s3 and A = 6s2 to find the volume and surface area of a cube with sides of length s = 1/2.
- **6.EE.A.3**. Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.
- **6.EE.A.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). For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

◎ Additional Cluster

- **6.NS.B.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. For example, express 36 + 8 as 4 (9 + 2).

Highlighted Interdisciplinary Connections

- **MS-LS2-4** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- **W.6.2**. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

Highlighted Career Ready Practices and 21st Century Themes and Skill

- **9.2.8.CAP.15**: Present how the demand for certain skills, the job market, and credentials can determine an individual's earning power.

Social Emotional Learning Competencies

- **2.1.8.EH.1**: Compare and contrast stress management strategies that are used to address various types of stress-induced situations (e.g., academics, family, personal relationships, finances, celebrations, violence).
- **2.1.8.EH.2**: Analyze how personal attributes, resiliency, and protective factors support mental and emotional health.

Pre-Assessment

- 6.EE.A.2
- 6.EE.A.3
- 6.EE.A.4

Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)

- Peer support, challenge work, individual instruction, vocabulary flash cards, and specific other accommodations/modifications per a student's IEP or 504 plan.

Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

■ **6.EE.A.2** Evaluate algebraic expressions given values of their variables.	SMP 2 Reason abstractly and quantitatively	Evaluate the expressions for a = 3, b = 4, c = 12. 6 + a c(a) bc + 3a	Graphic Organizer Games Student Journal Tutorial Example: Identifying Parts of Expressions Tutorial Example: Evaluating Expressions Tutorial Example: Model with Real Life	Blocks and pawns, algebra tiles, grid paper, challenge problems, specific other accommodations/modifications per a student's IEP or 504 plan
■ **6.EE.A.2** Write algebraic expressions and solve problems involving algebraic expressions.	SMP 8 Look for and express regularity in repeated reasoning	Write each phrase as an expression: 5 less than 8; the quotient of 18 and a number. It costs $3 to bowl a game and $2 for shoe rental. Write an expression that represents the total cost (in dollars) of g games.	Graphic Organizer Games Student Journal Tutorial Example: Writing Algebraic Expressions Tutorial Example: Model with Real Life	Word Bank Keyword Vocabulary flash cards Challenge/Integers specific other accommodations/modifications per a student's IEP or 504 plan
■ **6.EE.A.4** Identify equivalent expressions and apply properties to generate equivalent expressions.	SMP 2 Reason abstractly and quantitatively	Tell which property each statement illustrates: 5*p = p*5 4*(x * 10) = (4 * x) * 10 You have a $50 and a $15 gift card to spend online. You purchase a pair of headphones for $34.99 and 8 songs for x dollars each. Use an algebraic expression to find the total	Graphic Organizer Games Student Journal Tutorial Example: Using Properties to Write Equivalent Expressions Tutorial Example: Model with Real Life	Flashcards, printed notes, balance scales, specific other accommodations/modifications per a student's IEP or 504 plan

Key: ■ Major Cluster ☐ Supporting Cluster ◎ Additional Cluster

		amount you have left when each song costs $1.10.		
■ **6.EE.A.3** Apply the Distributive Property to generate equivalent expressions.	SMP 2 Reason abstractly and quantitatively	One molecule of caffeine contains x oxygen atoms, twice as many nitrogen atoms as oxygen atoms, 4 more carbon atoms than nitrogen atoms, and 1.25 times as many hydrogen atoms as carbon atoms. Write and simplify an expression that represents the number of hydrogen atoms in one molecule of caffeine. Simplify: 3(2x + 10) 2w + 4 + 13 w + 1	Graphic Organizer Games Student Journal Tutorial Example: Simplifying Expressions Tutorial Example: Combining Like Terms Tutorial Example: Model with Real Life	Challenge work, color/shape coding, area model, pawns and cubes, algebra tiles, balance scales, specific other accommodations/modifications per a student's IEP or 504 plan
◎ **6.NS.B.4** Factor numerical and algebraic expressions.	SMP 3 Construct viable arguments and critique the reasoning of others	A youth club receives a discount on each pizza purchased for a party. The original of each pizza is x dollars. The club leader purchases 8 pizzas for a total of (8x -32) dollars. Factor the expression. What can you conclude about the discount? Which does not belong. 3(8n +12) 4(6n + 9)	Graphic Organizer Games Student Journal Tutorial Example: Factor Algebraic Expressions Tutorial Example: Model with Real Life	Area model, multiplication grid, GCF review/notes, pawns and cubes, algebra tiles, balance scales, specific other accommodations/modifications per a student's IEP or 504 plan

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

		6(4n +3) 12(2n + 3)		
Benchmark Assessment • Quarterly 2 (6.RP.A. 1, 6.RP.2, 6.RP.A.3, 6.NS.C.7, 6.EE.A.2 6.EE.A.3)		**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)** • Extended time, scribe, speech to text, challenge/scaffold questions, multiplication chart or calculator as needed, highlight keywords, multilingual glossary, and specific other accommodations/modifications per a student's IEP or 504 plan.		
Summative Assessment(s) • Check-in 1: Expressions (6.EE.A.2) • Check-in 2: Properties (6.EE.A.3, 6.EE.A.4) • Check-in 3: Factoring (6.EE.A.4) • Performance Task 5				

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

Hillsborough Township Public Schools
Grade 6 Mathematics Curriculum

Unit Title: Unit 6 Equations	**Timeframe/Pacing:** 14 days

Essential Questions

- How are inverse operations used to solve mathematical problems?
- How can algebraic representations be used to generalize patterns and relationships?

Enduring Understandings

- Computational fluency includes understanding the meaning and the appropriate use of numerical operations.
- The symbolic language of algebra is used to communicate and generalize the patterns in mathematics.

Standards Taught and Assessed

■ Major Cluster

- 6.EE.B.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
- 6.EE.B.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.B.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.C.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. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

Highlighted Interdisciplinary Connections

- **MS-PS2-2** Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.

Highlighted Career Ready Practices and 21st Century Themes and Skill

- 9.1.8.CP.1: Compare prices for the same goods or services

Social Emotional Learning Competencies

- **2.1.8.EH.1**: Compare and contrast stress management strategies that are used to address various types of stress-induced situations (e.g., academics, family, personal relationships, finances, celebrations, violence).
- **2.1.8.EH.2**: Analyze how personal attributes, resiliency, and protective factors support mental and emotional health.

Pre-Assessment

- 6.EE.B.6
- 6.EE.B.5

Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)

- Peer support, challenge work, individual instruction, vocabulary flash cards, and specific other accommodations/modifications per a student's IEP or 504 plan.

Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
■ 6.EE.B.6 Write equations in one variable and write equations that represent real-life problems.	SMP 2 Reason abstractly and quantitatively	Write each sentence as an equation: A number decreased by 9 is 8. 5 less than a number is 12. You hit a golf ball 90 yd. It travels three-fourths of the distance to the hole. Write an equation you can use to find the distance d (in yards) from the tee to the hole.	Graphic Organizer Games Student Journal Tutorial Example: Writing Equations Tutorial Example: Model with Real Life	Word bank, key word chart, vocabulary flash cards, printed notes, specific other accommodations/modifications per a student's IEP or 504 plan

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

■ 6.EE.B.5 Write and solve equations using addition or subtraction.	SMP 2 Reason abstractly and quantitatively	Solve each equation: w + 23 = 41 f -27 = 19	Graphic Organizer Games Student Journal Tutorial Example: Solving Equations using Addition Tutorial Example: Solving Equations using Subtraction Tutorial Example: Model with Real Life	Balance scales, pawns and cubes, color/shape coding, specific other accommodations/modifications per a student's IEP or 504 plan
■ 6.EE.B.7 Write and solve equations using multiplication or division.	SMP 2 Reason abstractly and quantitatively	Solve the equation: 8x = 8 6 = t/5 5d/9 = 10 A rock climber climbs at a rate of 720 feet per hour. Write and solve an equation to find the number of minutes it takes for the rock climber to climb 288 feet.	Graphic Organizer Games Student Journal Tutorial Example: Solving Equations using Multiplication Tutorial Example: Solving Equations using Division Tutorial Example: Model with Real Life	Using reciprocals to cancel, multi-step equations, balance scales, specific other accommodations and/or /modifications per a student's IEP or 504 plan
■ 6.EE.C.9 Write equations in two variables and analyze the relationship between the two quantities.	SMP 3 Construct Viable arguments and critique the reasoning of others.	A lantern rises at an average speed of 8 feet per second. Write and graph and equation that represents the relationship between the time and the distance risen. How long does it take the lantern to rise 100 feet? Which is the dependent and independent variable. Y = 3x + 8 (4,20). Is it a solution to	Graphic Organizer Games Student Journal Tutorial Example: Writing and Graphing an Equation in Two Variables Tutorial Example: Model with Real Life	Vocabulary cards, pre-made graph, challenge problems, Desmos, specific other accommodations/modifications per a student's IEP or 504 plan

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

		the equation.		

Benchmark Assessment • Not applicable	**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)** • Extended time, scribe, speech to text, challenge/scaffold questions, multiplication chart or calculator as needed, highlight keywords, multilingual glossary, and specific other accommodations/modifications per a student's IEP or 504 plan.
Summative Assessment(s) • Unit 6 Check-in 1: Write and Solve Equations (6.EE.B.6, 6.EE.B.7) • Unit 6 Check-in 2: Independent and Dependent Variables (6.EE.B.5, 6.EE.C.9) • Performance Task 6	

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

Hillsborough Township Public Schools
Grade 6 Mathematics Curriculum

Unit Title: Unit 7 Area, Surface Area, and Volume	**Timeframe/Pacing:** 20 days

Essential Questions

- How can spatial relationships be described by careful use of geometric language?
- How can we best represent and verify geometric/algebraic relationships?
- How do geometric relationships help to solve problems and/or make sense of phenomena?

Enduring Understandings

- Geometric relationships provide a means to make sense of a variety of phenomena.
- Reasoning and/or proof can be used to verify or refute conjectures or theorems in geometry.

Standards Taught and Assessed

■ Major Cluster

- 6.EE.A.2 Write, read, and evaluate expressions in which letters stand for numbers.
  c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = ½$.

□ Supporting Cluster

- 6.G.A.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.A.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 $V = l\ w\ h$ and $V = B\ h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
- 6.G.A.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.

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

Highlighted Interdisciplinary Connections

- **1.5.8.Re8a:** Interpret art by analyzing how the interaction of subject matter, characteristics of form and structure, use of media, art making approaches, and relevant contextual information contributes to understanding messages or ideas and mood conveyed.

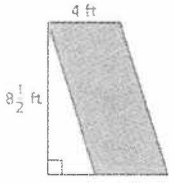
Highlighted Career Ready Practices and 21st Century Themes and Skill

- **9.2.5.CAP.1**: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.

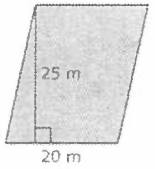
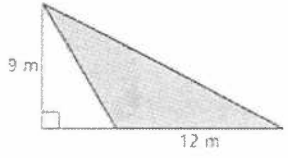
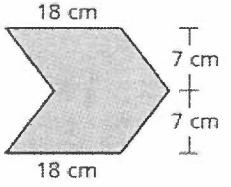
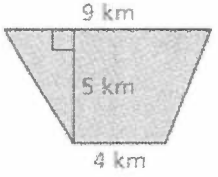
Social Emotional Learning Competencies

- **2.1.8.EH.1**: Compare and contrast stress management strategies that are used to address various types of stress-induced situations (e.g., academics, family, personal relationships, finances, celebrations, violence).
- **2.1.8.EH.2**: Analyze how personal attributes, resiliency, and protective factors support mental and emotional health.

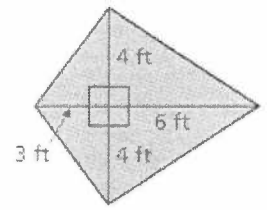
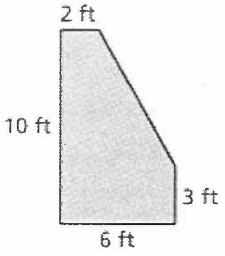
Pre-Assessment	**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)**
• 6.EE.A.2 • 6.G.A.1	• Peer support, challenge work, individual instruction, vocabulary flash cards, and specific other accommodations/modifications per a student's IEP or 504 plan.

Student Learning Objectives: We are learning to/that...	**Student Strategies (Mathematical Practices)**	**Formative Assessment**	**Activities and Resources**	**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)**
☐ 6.G.A.1 Find areas and missing dimensions of parallelograms.	SMP 7 Look for and make use of structure	Determine the area: 	Graphic Organizer Games Student Journal Tutorial Example: Finding Area of Parallelograms Tutorial Example: Model with Real Life	SMP 7 Look for and make use of structure

Key: ■ Major Cluster ☐ Supporting Cluster ◎ Additional Cluster

		 Determine the missing dimension: b = 6ft. h = ___ A = 54 ft.^{2}		
☐ 6.G.A.1 Find areas and missing dimensions of triangles and find areas of composite figures.	SMP 7 Look for and make use of structure	Determine the area:  	Graphic Organizer Games Student Journal Tutorial Example: Finding Area of Triangles Tutorial Example: Model with Real Life	Pattern blocks, grid paper, dot paper, formula reference sheet, calculator, specific other accommodations/modifications per a student's IEP or 504 plan
☐ 6.G.A.1 Find areas of trapezoids, kites, and composite figures.	SMP 7 Look for and make use of structure	Determine the area: 	Graphic Organizer Games Student Journal Tutorial Example: Finding Area of Trapezoids and Kites Tutorial Example: Finding Area of Compound Figures	Pattern blocks, grid paper, dot paper, formula reference sheet, calculator, specific other accommodations/modifications per a student's IEP or 504 plan

Key: ■ Major Cluster ☐ Supporting Cluster ◎ Additional Cluster

		 	Tutorial Example: Model with Real Life	
☐ 6.G.A.4 Describe and draw three-dimensional figures.	SMP4 Model with mathematics	The base of a prism has n sides. Find the numbers of faces, edges, and vertices of the prism. Explain your reasoning. The Flatiron building in New York City is in the shape of a triangular prism. Draw a sketch of the building. Determine the number of faces, edges, and vertices of a diamond.	Graphic Organizer Games Student Journal Rich Math Task: Art Tutorial Example: Number of Faces, Edge, Vertices Tutorial Example: Model with Real Life	3 dimensional models, nets, pattern blocks, grid paper, dot paper, formula reference sheet, calculator, specific other accommodations and/or modifications per a student's IEP or 504 plan
☐ 6.G.A.4 Represent	SMP4 Model with	One pint of paint covers 60	Graphic Organizer	3 dimensional models,

Key: ■ Major Cluster ☐ Supporting Cluster ◎ Additional Cluster

prisms using nets and use nets to find surface areas of prisms.	mathematics	square feet. What is the least number of pints needed to paint the walls of a room in the shape of a rectangular prism with a length of 15 feet, a width of 13 feet, and a height of 10 feet? Explain. Determine the surface area of a cube with edge lengths of 9 centimeters. Construct a net to help.	Games Student Journal Tutorial Example: Surface Area of a Rectangular Prism Tutorial Example: Model with Real Life	nets, pattern blocks, grid paper, dot paper, formula reference sheet, calculator, specific other accommodations and/or modifications per a student's IEP or 504 plan
☐ 6.G.A.4 Represent pyramids using nets and use nets to find surface areas of pyramids.	SMP 3 Construct viable arguments and critique the reasoning of others	Originally, each triangular face of the Great Pyramid of Giza had a height of 612 feet and a base of 756 feet. Today the height of each triangular face of the square pyramid is 592 feet. Find the change in the surface area of the pyramid. Determine the surface area of a square pyramid that has a base of 49 sq yards and a height of 4 yds.	Graphic Organizer Games Student Journal Tutorial Example: Surface Area of a Square Pyramid Tutorial Example: Model with Real Life	3 dimensional models, nets, pattern blocks, grid paper, dot paper, formula reference sheet, calculator, specific other accommodations and/or modifications per a student's IEP or 504 plan
■ 6.EE.A.2 Find the volume and missing dimensions of rectangular prisms.	SMP4 Model with mathematics	The shark cage is in the shape of a rectangular prism and has a volume of 315 cubic feet. Find a set	Graphic Organizer Games Student Journal Tutorial Example: Finding	Calculator, fraction block cubes, specific other accommodations/modifications per a student's IEP or

Key: ■ Major Cluster ☐ Supporting Cluster ◎ Additional Cluster

		of reasonable dimensions for the base of the cage if the height is 8ft. Determine the volume: 3/4m by 1/2m by 5/8m	Volume of Rectangular Prisms Tutorial Example: Model with Real Life	504 plan
Benchmark Assessment Quarterly 3 (6.EE.B.5, 6.EE.B.6, 6.EE.B.7, 6.EE.C.9, 6.EE.A.2, 6.G.A.1, 6.G.A.3, 6.G.A.4)		**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)**		
Summative Assessment(s) • Unit 7 Check-in 1: Area (6.EE.A.2, 6.G.A.1) • Unit 7 Check-in 2: Surface Area (6.G.A.4) • Unit 7 Check-in 3: Volume (6.EE.A.2, 6.G.A.2) • Performance Task 7		Extended time, scribe, speech to text, challenge/scaffold questions, multiplication chart or calculator as needed, highlight keywords, multilingual glossary, and specific other accommodations/modifications per a student's IEP or 504 plan.		

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

Hillsborough Township Public Schools
Grade 6 Mathematics Curriculum

Unit Title: Unit 8 Integers, Number Lines, and the Coordinate Plane	**Timeframe/Pacing:** 23 days

Essential Questions

- How can we compare and contrast rational numbers?

Enduring Understandings

- Rational numbers can be represented in multiple ways and are useful when examining situations involving numbers that are not whole.

Standards Taught and Assessed

■ Major Cluster

- 6.NS.C.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.
- 6.NS.C.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.
  a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.
  b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
  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.C.7 Understand ordering and absolute value of rational numbers.
  a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.
  b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write –3 o C > –7 o C to express the fact that –3 o C is warmer than –7 o C.
  c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real world situation. For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.
  d. Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.

Key: ■ Major Cluster ☐ Supporting Cluster ◎ Additional Cluster

- 6.NS.C.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.
- 6.EE.B.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
- 6.EE.B.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.B.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

☐ Supporting Cluster

- 6.G.A.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.

Highlighted Interdisciplinary Connections

- **8.1.8.CS.1:** Recommend improvements to computing devices in order to improve the ways users interact with the devices.

Highlighted Career Ready Practices and 21st Century Themes and Skill

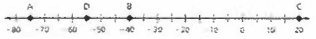
- Not applicable

Social Emotional Learning Competencies

- **2.1.8.EH.1**: Compare and contrast stress management strategies that are used to address various types of stress-induced situations (e.g., academics, family, personal relationships, finances, celebrations, violence).
- **2.1.8.EH.2**: Analyze how personal attributes, resiliency, and protective factors support mental and emotional health.

Pre-Assessment	**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)**
• 6.NS.C.5 • 6.NS.C.8	• Peer support, challenge work, individual instruction, vocabulary flash cards, and

Key: ■ Major Cluster ☐ Supporting Cluster ◎ Additional Cluster

• 6.EE.B.8		specific other accommodations/modifications per a student's IEP or 504 plan.		
Student Learning Objectives: We are learning to/that...	**Student Strategies (Mathematical Practices)**	**Formative Assessment**	**Activities and Resources**	**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)**
■ 6.NS.C.5 Understand the concept of negative numbers and that they are used along with positive numbers to describe quantities.	SMP 2 Reason abstractly and quantitatively	Write an integer that represents the situation: A loss of 3 yards. Depositing $25. 50 feet below sea level. Identify the integer represented by each point on the number line: 	Graphic Organizer Games Student Journal Tutorial Example: Writing Positive and Negative Numbers Tutorial Example: Graphing Integers Tutorial Example: Model with Real Life	Horizontal and vertical number lines, red/white chips, beans/markers, number cubes, specific other accommodations and/or modifications per a student's IEP or 504 plan
■ 6.NS.C.7 Compare and order integers.	SMP3 Construct a viable argument and critique the reasoning of others	Order the integers from least to greatest: -4, -2, -3, 2, 1 Compare: 3 ____ 0 -5 ____ -10 In a round of golf, the lowest score wins. At the end of a round you have score –3 and your friend has score –4. Who won the round? Explain.	Graphic Organizer Games Student Journal Tutorial Example: Comparing Integers Tutorial Example: Ordering Integers Tutorial Example: Model with Real Life	Horizontal and vertical number lines, red/white chips, beans/markers, number cube, specific other accommodations and/or modifications per a student's IEP or 504 plan
■ 6.NS.C.7 Compare and order rational	SMP6 Attend to precision	Compare: -1½ ___ - 1 ¼ -2.05 ____ -2.50	Graphic Organizer Games	Horizontal and vertical number lines, red/white

Key: ■ Major Cluster ▢ Supporting Cluster ◎ Additional Cluster

numbers.		Order from least to greatest: $-\frac{5}{8}, -\frac{3}{4}, -1\frac{1}{8}, -\frac{3}{8}, -1\frac{1}{4}$ $0.7, -0.3, 0, 0.25, -0.37$	Student Journal Tutorial Example: Comparing Fractions and Mixed Numbers Tutorial Example: Comparing Decimals Tutorial Example: Model with Real Life	chips, beans/markers, number cube, mixed form comparing/ordering (fractions, decimals, integers), specific other accommodations and/or modifications per a student's IEP or 504 plan
■ 6.NS.C.7 Understand the concept of absolute value.	SMP 2 Reason abstractly and quantitatively	Write two integers that have an absolute value of 15. Determine the absolute value: $\left\|-\frac{1}{4}\right\|$ $\|-10.2\|$ $\left\|2\frac{1}{7}\right\|$	Graphic Organizer Games Student Journal Tutorial Example: Finding Absolute Value Tutorial Example: Comparing Values Tutorial Example: Model with Real Life	Horizontal and vertical number lines, red/white chips, beans/markers, number cube, specific other accommodations and/or modifications per a student's IEP or 504 plan
■ 6.NS.C.8 Plot ordered pairs in all four quadrants in the coordinate plane.	SMP7 Look for and make use of Structure	At a park, the welcome center is located at (0,0), the theater is at (2,4), and the restrooms are located at (-4.5,6). The snack bar is exactly halfway between the welcome center and the theater. Graph each location in the coordinate plane.	Graphic Organizer Games Student Journal Tutorial Example: Plotting an Ordered Pair Tutorial Example: Model with Real Life	Horizontal and vertical number lines, red/white chips, beans/markers, number cubes, grid paper, specific other accommodations and/or modifications per a student's IEP or 504 plan
■ 6.NS.C6 Reflect ordered pairs in all four	SMP7 Look for and make use of Structure	Reflect the point in the given axis. (9,8) x-axis (2.5, -4) y-axis then x-axis	Tutorial Example: Reflecting a Pointing Both Axes	Horizontal and vertical number lines, red/white chips, beans/markers, number cubes, grid paper, specific other accommodations and/or

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

quadrants in the coordinate plane.				modifications per a student's IEP or 504 plan
☐ 6.G.A.3 Draw polygons in the coordinate plane and find distances between points in the coordinate plane.	SMP 8 Look for and express regularity in repeated reasoning	Draw the polygon with the given vertices. (-5,-7) (-2,4) (5,-1) Find the distance between (2,7) (2,9) You design a treehouse using a coordinate plane in which the coordinates are measured in feet. The vertices of the floor are (-2, -3), (-2, 4), (5, 4) and (5, -3). Find the perimeter (in yards) and the area (in square yards) of the floor.	Graphic Organizer Games Student Journal Tutorial Example: Finding Distance Between the Points Tutorial Example: Model with Real Life	Horizontal and vertical number lines, red/white chips, beans/markers, number cubes, grid paper, formula reference sheet, specific other accommodations and/or modifications per a student's IEP or 504 plan
■ 6.EE.B.5 Use substitution to determine whether a given number in a specified set makes an inequality true.	SMP 2 Reason abstractly and quantitatively	Is 6 a solution to $p + 5 \leq 12$	Student Journal	Word bank/ chart, symbol reference sheet, arrow manipulative, specific other accommodations and/or modifications per a student's IEP or 504 plan
■ 6.EE.B.6 Write inequalities and represent solutions of inequalities	SMP 2 Reason abstractly and quantitatively	To obtain a babysitting license, you still need to train for at least 6 hours and 45 minutes. Create and	Graphic Organizer Games Student Journal	Horizontal and vertical number lines, word bank/ chart, symbol reference

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on number lines.		graph an inequality for the situation. Graph $n > 8$ $q \leq -7$	Tutorial Example: Checking Solutions Tutorial Example: Graphing an Inequality Tutorial Example: Model with Real Life	sheet, arrow manipulative, specific other accommodations and/or modifications per a student's IEP or 504 plan
■ 6.EE.B.8 Write and solve inequalities.	SMP 2 Reason abstractly and quantitatively	A small pizza cost $4.50 and a salad cost $3.75. You plan to buy two small pizzas and four salads. If you can get free delivery when you spend $40, write and solve an inequality to find the additional amounts you can spend to get free delivery. $n + 6 < 10$ How is the solution to $2x \geq 10$ different than $2x = 10$	Graphic Organizer Games Student Journal Tutorial Example: Solving an Inequality using Addition or Subtraction Tutorial Example: Solving an Inequality using Multiplication or Division Tutorial Example: Model with Real Life	Horizontal and vertical number lines, word bank/ chart, symbol reference sheet, arrow manipulative, specific other accommodations and/or modifications per a student's IEP or 504 plan

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Benchmark Assessment • Not applicable	**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)** • Extended time, scribe, speech to text, challenge/scaffold questions, multiplication chart or calculator as needed, highlight keywords, multilingual glossary, and specific other accommodations/modifications per a student's IEP or 504 plan.
Summative Assessment(s) • Unit 8 Check-in 1: Integers (6.NS.C.5, 6.NS.C.6, 6.NS.C.7) • Unit 8 Check-in 2: Rational Numbers (6.NS.C.6, 6.NS.C.7) • Unit 8 Check-in 3: Coordinate Plane (6.NS.C.6, 6.NS.C.8) • Unit 8 Check-in 4: Inequalities (6.EE.B.5, 6.EE.B.6, 6.EE.B.8) • Performance Task 8	

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Hillsborough Township Public Schools
Grade 6 Mathematics Curriculum

Unit Title: Unit 9 Statistical Measures	**Timeframe/Pacing:** 13 days

Essential Questions

- How do we collect and make sense of data?

Enduring Understandings

- The message conveyed by the data depends on how the data is collected, represented, and summarized.

Standards Taught and Assessed

◎ Additional Cluster

- 6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.
- 6.SP.A.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.A.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
- 6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- 6.SP.B.5 Summarize numerical data sets in relation to their context, such as by:
  a. Reporting the number of observations.
  b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
  c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

Highlighted Interdisciplinary Connections

- **8.1.8.DA.4:** Transform data to remove errors and improve the accuracy of the data for analysis.

Highlighted Career Ready Practices and 21st Century Themes and Skill

- 9.1.8.FP.7: Identify the techniques and effects of deceptive advertising.

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Social Emotional Learning Competencies

- **2.1.8.EH.1**: Compare and contrast stress management strategies that are used to address various types of stress-induced situations (e.g., academics, family, personal relationships, finances, celebrations, violence).
- **2.1.8.EH.2**: Analyze how personal attributes, resiliency, and protective factors support mental and emotional health.

Pre-Assessment

- 6.SP.A.3
- 6.SP.B.4

Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)

- Peer support, challenge work, individual instruction, vocabulary flash cards, and specific other accommodations/modifications per a student's IEP or 504 plan.

Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
◎6.SP.A.1 Identify statistical questions and use data to answer statistical questions.	SMP 3 Construct viable arguments and critique the reasoning of others	Is "How many hours does a 6th grade student spend on homework during a school night?" a statistical question? Explain.	Graphic Organizer Games Student Journal Tutorial Example: Identifying Statistical Question Tutorial Example: Model with Real Life	Graphic organizer, specific other accommodations and/or modifications per a student's IEP or 504 plan
◎6.SP.B.4 Display numerical data in plots on a number line, including dot plots.	SMP 4 Model with mathematics	Display the data in a dot plot. Identify any clusters, peaks, or gaps in the data.	Tutorial Example: Using a Dot Plot Student Journal	Graphic organizer, specific other accommodations and/or modifications per a student's IEP or 504 plan

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		Number of Ounces 12 20 12 12 20 32 12 32 20 12 12 20		
◎6.SP.A.2 Find and interpret the mean of a data set.	SMP 4 Model with mathematics	Object / Radius(km) Jupiter 71,492 Saturn 60,268 Uranus 25,559 Neptune 24,764 Pluto 1151 Is there an outlier? Explain. Find the mean with and without the outlier. Describe how the outlier affects the mean.	Graphic Organizer Games Student Journal Tutorial Example: Finding the Mean Tutorial Example: Model with Real Life	Calculator, notes/Examples, challenge problems, specific other accommodations and/or modifications per a student's IEP or 504 plan
◎6.SP.A.3 Find and interpret the median and mode of a data set.	SMP 2 Reason abstractly and quantitatively	Determine the mean median mode and range 15, 18, 13, 11, 12, 21, 9 ,11 If each value is decreased by 7, how does it affect the mean, median, mode, and range.	Graphic Organizer Games Student Journal Tutorial Example: Finding the Median and the Mode Tutorial Example: Model with Real Life	Linking cubes, graph paper, notes/examples, challenge problems, vocabulary/ word bank, sentence starters, specific other accommodations and/or modifications per a student's IEP or 504 plan
◎6.SP.B.5 Find and interpret the range and interquartile range of a data set.	SMP 2 Reason abstractly and quantitatively	Create a data set with 7 values to have a mean of 30, median of 26, range of 50, and IQR of 36.	Graphic Organizer Games Student Journal Tutorial Example: Finding the Range	Calculator, notes/examples, challenge problems, vocabulary/word bank, specific other

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			Tutorial Example: Finding the IQR Tutorial Example: Model with Real Life	accommodations and/or modifications per a student's IEP or 504 plan
◎6.SP.B.5 Find and interpret the mean absolute deviation of a data set.	SMP 2 Reason abstractly and quantitatively	Determine the mean absolute deviation of these numbers: 8, 12, 4, 3, 14, 1, 9, 13. Explain what it describes.	Graphic Organizer Games Student Journal Tutorial Example: Finding the MAD Tutorial Example: Model with Real Life	Graph paper, otes/examples, vocabulary/word bank, sentence starters, calculator, challenge Problems, specific other accommodations and/or modifications per a student's IEP or 504 plan
Benchmark Assessment • Benchmark 3		**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)** • Extended time, scribe, speech to text, challenge/scaffold questions, multiplication chart or calculator as needed, highlight keywords, multilingual glossary, and specific other accommodations/modifications per a student's IEP or 504 plan.		
Summative Assessment(s) • Unit 9 Check-in 1: Measures of Center (6.SP.A.1, 6.SP.A.3, 6.SP.A.4, 6.SP.A.5) • Unit 9 Check-in 2: Measures of Variation (6.SP.A.3, 6.SP.A.5) • Performance Task 9				

Key: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster

Hillsborough Township Public Schools
Grade 6 Mathematics Curriculum

Unit Title: Unit 10 Data Displays	**Timeframe/Pacing:** 13 days

Essential Questions

- What does the collection of data and statistics tell us?

Enduring Understandings

- The message conveyed by the data depends on how the data is collected, represented, and summarized.

Standards Taught and Assessed

◎ Additional Cluster

- 6.SP.A.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.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- 6.SP.B.5 Summarize numerical data sets in relation to their context, such as by:

  c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

  d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Highlighted Interdisciplinary Connections

- **8.1.8.DA.1:** Organize and transform data collected using computational tools to make it usable for a specific purpose.

Highlighted Career Ready Practices and 21st Century Themes and Skill

- **9.2.8.CAP.11**: Analyze potential career opportunities by considering different types of resources, including occupation databases, and state and national labor market statistics.

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Social Emotional Learning Competencies

- **2.1.8.EH.1**: Compare and contrast stress management strategies that are used to address various types of stress-induced situations (e.g., academics, family, personal relationships, finances, celebrations, violence).
- **2.1.8.EH.2**: Analyze how personal attributes, resiliency, and protective factors support mental and emotional health.

Pre-Assessment	**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)**
• 6.SP.B.5 • 6.SP.A.2	• Peer support, challenge work, individual instruction, vocabulary flash cards, and specific other accommodations/modifications per a student's IEP or 504 plan.

Student Learning Objectives: We are learning to/that...	**Student Strategies (Mathematical Practices)**	**Formative Assessment**	**Activities and Resources**	**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)**
◎ 6.SP.B.4 Display data in stem-and-leaf plots.	SMP 2 Reason abstractly and quantitatively	Make a stem-and-leaf plot of the data. **Emails Sent** 55 12 37 42 35 56 9 16 38 31 12 45	Graphic Organizer Games Student Journal Tutorial Example: Making a Stem-and-Leaf Plot Tutorial Example: Tutorial Example: Model with Real Life	Post-it notes, specific other accommodations and/or modifications per a student's IEP or 504 plan
◎ 6.SP.B.4 Interpret data in stem-and-leaf plots.	SMP 2 Reason abstractly and quantitatively	The stem-and-leaf plot shows the weights (in pounds) of 15 pumpkins. Describe the distribution of the data.	Interpreting a Stem-and-Leaf Plot Student Journal	Specific other accommodations and/or modifications per a student's IEP or 504 plan

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		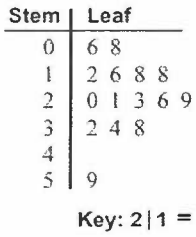 How many pumpkins weigh more than 10 pounds? What percent of the pumpkins weigh more than the mean?		
◎6.SP.B.4 Display and interpret data in histograms.	SMP 4 Model with mathematics.	Construct a histogram of the data of siblings of students in a class.	Graphic Organizer Games Student Journal Tutorial Example: Making a Histogram Tutorial Example: Model with Real Life	Grid Paper, pre-created intervals, specific other accommodations and/or modifications per a student's IEP or 504 plan
◎6.SP.A.2 Describe and compare shapes of distributions.	SMP 2 Reason abstractly and quantitatively	Display data in a histogram and describe the distribution. Describe the distribution of the dot plot.	Graphic Organizer Games Student Journal Tutorial Example: Describing Shapes of Distributions Tutorial Example: Model with Real Life	Vocabulary cards, specific other accommodations and/or modifications per a student's IEP or 504 plan

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◎ 6.SP.B.5 Determine which measures of center and variation best describes a data set.	SMP 3 Construct viable arguments and critique the reasoning of others.	Choose the most appropriate measure to describe the center of variation. Explain your reasoning. Create a dot plot of data and describe the best measure of center.	Graphic Organizer Games Student Journal Tutorial Example: Choosing Appropriate Measures Tutorial Example: Model with Real Life	TVocabulary cards, specific other accommodations and/or modifications per a student's IEP or 504 plan
6.SP.B.4 Display and interpret data in box-and-whisker plots.	SMP 4 Model with mathematics.	Determine the 5-number summary and make a box and whisker plot of the data. 39, 42, 40, 47, 38, 39, 44, 55, 44, 58, 45 Compare two different box plots and describe the distributions.	Graphic Organizer Games Student Journal Rich Math Tasks: Literature Notes Tutorial Example: Making a Box Plot Tutorial Example:Analyzing a Box Plot Tutorial Example: Model with Real Life	Vocabulary cards, specific other accommodations and/or modifications per a student's IEP or 504 plan

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Benchmark Assessment • Quarterly Assessment 4 (6.NS.C.5, 6.NS.C.6, 6.NS.C.7, 6.NS.C.8, 6.EE.B.5, 6.EE.B.8, 6.SP.A.2, 6.SP.A.3, 6.SP.B.4, 6.SP.B.5)	**Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)** • Extended time, scribe, speech to text, challenge/scaffold questions, multiplication chart or calculator as needed, highlight keywords, multilingual glossary, and specific other accommodations/modifications per a student's IEP or 504 plan.
Summative Assessment(s) • Unit 10 Check-in 1: Construct and Interpret Graphs (6.SP.A.4) • Unit 10 Check-in 2: Shape of Data Distribution (6.SP.A.2, 6.SP.A.4, 6.SP.A.5) • Performance Task 10	

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Bibliography
Grade 6

Supplemental Materials/Resources:

Larson, R. and Boswell, L. (2019). *Big ideas math: Modeling in real life*. Big Ideas Learning: Erie, Pennsylvania.

Digital Resources:

bigideaslearning.com - all print materials are also available digitally along with digital only resources