***Adams 14 Projected Curriculum Map***

***Course: \_***Mathematics***\_ Grade Level: \_\_\_\_***8th*\_\_\_\_\_\_\_* ***School Year:*** *2020-2021*

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| **Dates**  (months & days)  These dates are estimates only and include a cushion at the end of the year | **Content**  What topics will be taught and learned? What is the essential vocabulary for the unit? What do students need to know?  **Topic & Vocabulary** | | **Essential Questions**  What are the fundamental, enduring questions that will guide study and instruction? | **Skills**  What do students have to be able to do related to the content? (These can be written as student-friendly targets—“I can,” statements | **Standards**  What standards will be met through this topic? | **Instructional Strategies and Activities**  used to develop the skills and knowledge (Can be for either teacher or student) | **Resources**  What materials, texts, videos, internet, software, or human resources support instruction? | **Assessment**  What evidence (products and/or performances will be collected to establish that the content and skills have been learned and understood?  **NOTE:**  **MATH 1-12 BOY/MOY/EOY= CFA**  **ELA 6-12 Benchmark Form 1,2,3=CFA** |
| **RESOURCES:**  Differentiation  ELD/SPED/  GT/504/Other  [Get started with ELD](https://docs.google.com/document/d/1nUcqg08MdTNJhAwZ6y4uFVeepjc9ECmQHnKkuFNKOdk/edit) | Which unit **vocabulary** is key to understanding the unit?Has the most transfer to other subjects?  [Marzano’s Grade Level Vocabulary by Content](https://drive.google.com/file/d/1wS8GrrtybU-FHIkqXUj7NjqYPWwTIzt2/view?usp=sharing)  [Vocabulary for students with disabilities](https://council-for-learning-disabilities.org/effective-vocabulary-instruction-for-kindergarten-to-12th-grade-students-experiencing-learning-disabilities) | | What **funds of knowledge** do my students bring to the table? How can students tap into those as resources in ways that affirm identity?  [Engaging Background Knowledge](https://www.colorincolorado.org/role-background-knowledge)  [Activating prior knowledge in students with disabilities](https://iris.peabody.vanderbilt.edu/module/sec-rdng/cresource/q3/p09/) | What is the dominant [**language function**](https://drive.google.com/drive/folders/1CZUNtuaBQSO2444DnDMQmKsI7Gc4Rj60?usp=sharing)? ([Explain/Describe,](https://drive.google.com/file/d/1_Z7LhKZGmN0z6IB0O2clHS3_ljZWHLLy/view?usp=sharing) [Opinion](https://drive.google.com/file/d/1_Z7LhKZGmN0z6IB0O2clHS3_ljZWHLLy/view?usp=sharing), [Sequence](https://drive.google.com/file/d/1SyigG2eFPGnKY4Ep-DO7abv1r32DKlns/view?usp=sharing), [Cause/Effect](https://drive.google.com/file/d/1UIwaI22Fu9NcO6_rLPrAnceSQGT8nyw_/view?usp=sharing), [Compare/Contrast](https://drive.google.com/file/d/1vIdmxyYPb6yRpTJs2PyUoXnk1kOdMV1-/view?usp=sharing))  What **language forms support the function?** What **language forms** do my students need to utilize these skills?  Word/Phrase, Sentence, Discourse level) [Examples](https://drive.google.com/file/d/1KnYmPSBmzA2Q2JZHOW0zsbjOYAD1OsFc/view?usp=sharing)  How are the ideas organized? What elements create cohesion?  Which functional words/phrases will students be expected to know and use (Mortar)? What are the key words and phrases (Bricks)?  Create **sentence frames** using identified functional words/phrases | | Which strategies will I use to help students understand and utilize language?  **Strategies:**  [ColorinColorado Best Practices](https://www.colorincolorado.org/ell-strategies-best-practices) |  [CAL/EXCELL Go to Strategies](https://drive.google.com/file/d/1WtZYJb-l-Ly2zrXYYnhLtq81cJ2jgRGq/view?usp=sharing) |  [Structured Talk Resources](https://drive.google.com/drive/folders/10t21_8gWOOY5mhsMcx1zTe4weVTNDJMR?usp=sharing) | [Teaching Vocabulary](https://www.colorincolorado.org/teaching-vocabulary) |  [Marzano’s 6 Steps](https://drive.google.com/file/d/1OXQkZEIMlRSiYLoifpshqOBNW_9rL7AX/view?usp=sharing) | Are the resources I have chosen within the [Zone of Proximal Developmen](https://www.colorincolorado.org/faq/what-scaffolding-and-how-does-it-help-ells)t for Multilingual Learners?  Use supports/scaffolds and differentiated reading to support comprehensible input  [WIDA List of Supports](https://drive.google.com/file/d/1JV7JGbP1cYjbT-jJ-XvUbUOk8kUx88Ji/view?usp=sharing)  [Scaffolding Reading](https://iris.peabody.vanderbilt.edu/module/sca/cresource/q1/p01/) | Use [WIDA Can Do Key Uses](https://drive.google.com/drive/folders/1AeEQKdJ2aaF6DFkl8XhPaB3Bk9Wj0uYs?usp=sharing) to inform **linguistic expectations** at each level and guide **differentiation**.  [Accommodation for students with disabilities](http://www.specialconnections.ku.edu/?q=assessment/assessment_accommodations)  [Instructional VS Assessment accommodations](https://iris.peabody.vanderbilt.edu/module/acc/cresource/q2/p03/) |
| GT & Talent Pool  [Gifted Ed. Website](https://sites.google.com/adams14schools.org/adams14giftededucation/home) | Depth and Complexity [Talk Cards](https://sites.google.com/adams14schools.org/adams14giftededucation/professional-toolbox/depth-and-complexity) are differentiated sentence stems. Reach out to the GT Department for cards. | | See question lists on page 12 of the [Intellectual Standards](https://www.criticalthinking.org/store/get_file.php?inventories_id=338&inventories_files_id=407) | [Social Justice Standards](https://www.tolerance.org/frameworks/social-justice-standards); Identity, Diversity, Justice and Action  (Teaching Tolerance, 2020)  [Intellectual Standards](https://www.criticalthinking.org/store/get_file.php?inventories_id=338&inventories_files_id=407): clarity, precision, accuracy, relevance, depth, breadth, logicalness, significance, and fairness. (Elder & Paul 2008) | | Attend the days offered through the [Professional Learning Community Differentiation Series](https://drive.google.com/file/d/1X5vn2DGroiL0TCMRzjSVVoNokiNdIe6n/view?usp=sharing) that will assist in your professional learning. | Make Thinking Visible with [Thinking Routines](https://pz.harvard.edu/thinking-routines#CoreThinkingRoutines)  Achieve breadth and depth through [Depth and Complexity](https://sites.google.com/adams14schools.org/adams14giftededucation/professional-toolbox/depth-and-complexity). | Use the pretest to [compact](http://2differentiate.pbworks.com/w/page/860034/Compacting%20Curriculum) and [differentiate](http://2differentiate.pbworks.com/w/page/860044/Differentiation_Strategies) for GT & Talent Pool. |
| Unit 1  TRANSFORMATIONS  **AUGUST**  **(16 days)** | **Topics:**  **Transformations**  1. Verify experimentally the properties of rotations, reflections, and translations: (CCSS: 8.G.A.1)  a. Lines are taken to lines, and line segments to line segments of the same length. (CCSS: 8.G.A.1.a)  b. Angles are taken to angles of the same measure. (CCSS: 8.G.A.1.b)  c. Parallel lines are taken to parallel lines. (CCSS: 8.G.A.1.c)  2. Demonstrate that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. (CCSS: 8.G.A.2)  3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. (CCSS: 8.G.A.3)  4. Demonstrate that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. (CCSS: 8.G.A.4) | | **Essential Questions:**  How can I determine the relationship between angles, sides, and coordinates of shapes when I rotate, reflect, and translate polygons on a coordinate plane? | **Skills:**  **Rotate, reflect, translate and dilate a figure on a coordinate plane**  **Describe the effects to a figure’s sides, angles, and coordinates given a transformation** | **Standards: 8.G.A. Geometry: Understand congruence and similarity using physical models, transparencies, or geometry software.** | **Instructional Strategies and Activities:** Embedded Intervention  Turn and Talks  Reflection and justification through writing  Direct Instruction/Investigation  Group/ Partner/ Independent Practice  Content and Academic vocabulary instruction  Exit Tickets/ Checks for Understanding | **Resources:**  **HMH Modules 1 and 2** | **Assessment:**  **PRSI Math (1-12)**  Aug 12-18  **RS ELA (6-12)**  Aug 12-18  **Acadience (K-5)** BOY: Aug 17- Aug 28  **IDEL (K-3)** BOY: Aug 17- Aug 28  **STAR Reading** **(1-11)** BOY: Aug 17- Aug 28  **STAR Math** **(3-11)** BOY: Aug 17- Aug 28  **TS Gold** **(PS, PK, K)** Aug 8 - Oct 9 |
| Differentiation  ELD/SPED/  GT/504/Other | **Key Vocabulary:**  **center of rotation, center of dilation, congruent, dilation, image, mapping notation, preimage, prime notation, reflection, rotation, scale factor, similar, transformation, translation, enlarge, reduce** | | **Activities to engage background knowledge**:  HMH Spark  Identify Transformations in Indigenous People’s weavings, beadwork, pottery | **Identified Language Forms & Functions:**  compare/ contrast  sequence  cause/effect  Mortars: Create, identify, determine, verify, demonstrate, describe | **Sentence Frames:**  **When I translate/rotate/reflect/dilate a figure, its sides/anges/coordinates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**  **Compared to the original figure, the image is \_\_\_\_\_\_\_.** | **Language and/or Student Interaction Strategy:**  **Construct own piece using transformations**  **Tetris-**  **Sentence frames for speaking and writing** | **Supports/Scaffolds:**  Manipulatives  Small group problem solving  Mira  Patty Paper  Graphic organizer  Visual Word Wall | **Differentiation/Accommodations**:  Extend- |
| Unit 2  Linear Equations  **SEPTEMBER**  **(15 days)** | **Topics:**  **Solve linear equations in one variable. (CCSS: 8.EE.C.7)**  **a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form 𝑥𝑥=𝑎𝑎, 𝑎𝑎=𝑎𝑎, or 𝑎𝑎=𝑏𝑏 results (where 𝑎𝑎 and 𝑏𝑏 are different numbers). (CCSS: 8.EE.C.7.a)**  **b. Solve linear equations with rational number coefficients, including equations with variables on both sides and whose solutions require expanding expressions using the distributive property and collecting like terms. (CCSS: 8.EE.C.7.b)** | | **Essential Questions:**  How can I use algebraic reasoning and rules to solve problems?  How can inverse operations allow me to determine unknown values? | **Skills:**  **Solve multi-step equations** | **Standards: 8.EE.C. Expressions & Equations: Analyze and solve linear equations and pairs of simultaneous linear equations.** | **Instructional Strategies and Activities:** Embedded Intervention  Turn and Talks  Reflection and justification through writing  Direct Instruction/Investigation  Group/ Partner/ Independent Practice  Content and Academic vocabulary instruction  Exit Tickets/ Checks for Understanding | **Resources:**  **HMH Modules 3** | **Assessment:**  **District Common Formative Assessments (4-8)** 1st: Sep 28- Oct 7  **TS Gold** **(PS, PK, K)** Aug 8 - Oct 9  **SAT School Day Administration (12)** Sept 23 |
| Differentiation  ELD/SPED/  GT/504/Other | **Key Vocabulary:**  Inverse operations, variable, coefficient, constant, equation, like terms, distributive property | | **Activities to engage background knowledge**:  HMH Spark | **Identified Language Forms & Functions:**  Sequence  Explain/Describe | **Sentence Frames:**  **To solve for \_\_\_\_\_\_, first I \_\_\_\_\_\_\_\_\_. Then I \_\_\_\_\_\_\_. Finally I \_\_\_\_\_\_\_\_\_\_\_\_.** | **Language and/or Student Interaction Strategy:**  1 Step Pass  Sentence frames for writing and speaking  Rally coach | **Supports/Scaffolds:**  Integer rules  Calculator  Inverse Operation chart  PEMDAS organizer | **Differentiation/Accommodations**:  Non- integer coefficients/constants  Order of operations challenge problems  Infinite/No solution problems |
| Unit 3  Slope and Linear Representations  **OCTOBER/**  **NOVEMBER**  **(33 days)** | **Topics:**  **1. Define a function as a rule that assigns to each input exactly one output. Show that the graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (Function notation is not required for Grade 8.) (CCSS: 8.F.A.1)**  **2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change. (CCSS: 8.F.A.2)**  **3. Interpret the equation 𝑦=𝑚x +𝑏 as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function 𝐴𝐴=𝑠𝑠2 giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line. (CCSS: 8.F.A.3)**  **4. Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (𝑥𝑥,𝑦𝑦) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. (CCSS: 8.F.B.4)**  **5. Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally. (CCSS: 8.F.B.5)** | | **Essential Questions:**  How can I use slope to compare rates of change and y-intercepts to compare initial values in various representations? How do linear functions allow me to set up and solve problems involving unit rates? | **Skills:**  **Identify the slope and y-intercept in linear representations**  **Given a slope and y-intercept, create any representation**  **Compare slope and y-intercept in different representations**  **Classify representations as a function or not a function**  **Classify representations as linear or nonlinear.** | **Standards:**  **8.F.A. Functions: Define, evaluate, and compare functions.**  **8.F.B. Functions: Use functions to model relationships between quantities.** | **Instructional Strategies and Activities:** Embedded Intervention  Turn and Talks  Reflection and justification through writing  Direct Instruction/Investigation  Group/ Partner/ Independent Practice  Content and Academic vocabulary instruction  Exit Tickets/ Checks for Understanding | **Resources:**  **HMH Modules 5 and 6** | **Assessment:**  **District Common Formative Assessments (4-8)** 1st: Sep 28- Oct 7  **PSAT/NMSQT(9-11)** Oct 14  **ACT Workkeys (11&12)**  Oct 30  **TS Gold** **(PS, PK, K)** Aug 8 - Oct 9 |
| Differentiation  ELD/SPED/  GT/504/Other | **Key Vocabulary:**  Slope, y-intercept, rate of change, initial value, table, graph, slope-intercept equation, function/not a function, linear/nonlinear | | **Activities to engage background knowledge**:  Describe where the slope of a real world object is important and how its steepness relates to its purpose. | **Identified Language Forms & Functions:**  Explain/Describe  Sequence  Compare/Contrast | **Sentence Frames:**  **When the \_\_\_\_\_ of the graph moves \_\_\_\_\_\_, that means that \_\_\_\_\_\_\_.**  **To find/ create a \_\_\_\_\_\_\_ from a \_\_\_\_\_\_\_\_, first I \_\_\_\_\_\_\_\_. Then I \_\_\_\_\_,**  **The slope/y-int in the \_\_\_\_\_\_\_ compares to the slope/y-int in the \_\_\_\_\_\_\_\_ by \_\_\_\_\_\_\_\_.** | **Language and/or Student Interaction Strategy:**  **Wages In America-**  **Sentence Frames for writing and speaking**  **Class created word banks for word problems** | **Supports/Scaffolds:**  Visual representations of slope (roofs, roller coasters, ramps, mountains)  Drawing staircases (different rise/runs) on graph paper  Function Machine visual  Visual vocabulary word wall  Graphic Organizer of m and b in all 4 representations  Vocabulary bank of key signal words (per, every, fee, etc) | **Differentiation/Accommodations**:  Extend- Graphing in standard form, x and y intercepts  Comparing representations in different forms  Create word problems given a randomly assigned value. |
| Unit 4  Systems of Equations  **DECEMBER**  **(13.5 days)** | **Topics:**  **8. Analyze and solve pairs of simultaneous linear equations. (CCSS: 8.EE.C.8)**  **a. Explain that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. (CCSS: 8.EE.C.8.a)**  **b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, 3𝑥𝑥+2𝑦𝑦=5 and 3𝑥𝑥+2𝑦𝑦=6 have no solution because 3𝑥𝑥+2𝑦𝑦 cannot simultaneously be 5 and 6. (CCSS: 8.EE.C.8.b)** | | **Essential Questions:**  How can I use a system of linear equations to determine when various problems share the same solution? | **Skills:**  **Identify if a graph of a system has one, zero, or infinite solutions**  **Graph 2 linear equations and determine the solution**  **Solve a system of equations using the substitution method**  **Solve a system of equations using the elimination method**  **Verify if a given solution is the correct solution to a system of equations** | **Standards:**  **8.EE.C. Expressions & Equations: Analyze and solve linear equations and pairs of simultaneous linear equations.** | **Instructional Strategies and Activities:** Embedded Intervention  Turn and Talks  Reflection and justification through writing  Direct Instruction/Investigation  Group/ Partner/ Independent Practice  Content and Academic vocabulary instruction  Exit Tickets/ Checks for Understanding | **Resources:**  **HMH Module 7** | **Assessment:**  **Acadience (K-5)** MOY: Nov 30- Dec 11  **IDEL (K-3)** MOY: Nov 30- Dec 11  **NNAT3 (2&6)** TBD  **STAR Reading** (1-11) MOY: Nov 30- Dec 11  **STAR Math** (3-11) MOY: Nov 30- Dec 11  **TS Gold** **(PS & PK)** All year |
| Differentiation  ELD/SPED/  GT/504/Other | **Key Vocabulary:**  solution, system of linear equation, elimination, substitution, infinite solution, no solution | | **Activities to engage background knowledge**:  Comparing a product’s price between two companies | **Identified Language Forms & Functions:**  Explain/Describe  Sequence | **Sentence Frames:**  **The system has \_\_\_\_\_ solutions because \_\_\_\_\_\_\_\_.**  **The solution to the system \_\_\_\_\_\_\_ is \_\_\_\_\_ because. To solve, first I \_\_\_\_\_\_, then I \_\_\_\_\_\_.** | **Language and/or Student Interaction Strategy:**  Rally Coach  Turn and Talk - Elimination/Substitution/Graphing method  1 Step Pass | **Supports/Scaffolds:**  Graphing solution  Substitution- cut and paste  Color coding equations and variables  Solutions Graphic organizer | **Differentiation/Accommodations**:  Extend- Graphing systems in standard form, substitution rearrange, elimination- multiply by a constant |
| Unit 5  Scatter Plots and Bivariate  **JANUARY**  **(15 days)** | **Topics:**  **1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. (CCSS: 8.SP.A.1)**  **2. Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. (CCSS: 8.SP.A.2)**  **3. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height. (CCSS: 8.SP.A.3)**  **4. Explain that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores? (CCSS: 8.SP.A.4)** | | **Essential Questions:**  How can I make predictions, see patterns and draw conclusions from 2 sets of data? | **Skills:**  **Create a scatter plot**  **Analyze the relationship, if any, of a scatter plot**  **Use a frequency table to draw conclusions from data and investigate possible associations** | **Standards: 8.SP.A. Statistics & Probability: Investigate patterns of association in bivariate data.** | **Instructional Strategies and Activities:** Embedded Intervention  Turn and Talks  Reflection and justification through writing  Direct Instruction/Investigation  Group/ Partner/ Independent Practice  Content and Academic vocabulary instruction  Exit Tickets/ Checks for Understanding | **Resources:**  **HMH Modules 8 and 9** | **Assessment:**  **Acadience (K-5)** MOY: Nov 30- Dec 11  **IDEL (K-3)** MOY: Nov 30- Dec 11  **District Common Formative Assessments (4-8)** 2nd: Dec 7- Dec 17  **STAR Reading** (1-11) MOY: Nov 30- Dec 11  **STAR Math** (3-11) MOY: Nov 30- Dec 11  **TS Gold** **(PS & PK)** All year |
| Differentiation  ELD/SPED/  GT/504/Other | **Key Vocabulary:**  association, cluster, scatter plot, outlier, line of best fit, correlation, linear relationship,  relative frequency | | **Activities to engage background knowledge**:  Given 2 variables, predict if they have a relationship. (For example: Height/Weight, letters of names/GPA) | **Identified Language Forms & Functions:**  Explain/Describe  Cause/ Effect | **Sentence Frames:**  **The data shows a \_\_\_\_\_ correlation because \_\_\_\_\_\_**  **\_\_\_\_\_\_ has a \_\_\_\_\_\_ correlation because\_\_\_\_\_\_\_**  **An increase/decrease in \_\_\_\_\_\_\_\_ correlates to a \_\_\_\_\_\_\_ in \_\_\_\_\_\_\_ because \_\_\_\_\_\_\_\_\_\_\_.** | **Language and/or Student Interaction Strategy:**  **measurement/ball bounce lab**  **Sentence frames for writing and speaking to justify interpretation of data** | **Supports/Scaffolds:**  electronic support (google sheets)  Calculators  graph paper | **Differentiation/Accommodations**:  research/inquiry project- Does \_\_\_\_\_ cause \_\_\_\_\_\_? |
| Unit 6  Real Numbers and Pythagorean Theorem  **February**  **(17 days)** | **Topics:**  **2. Use square root and cube root symbols to represent solutions to equations of the form 𝑥𝑥2=𝑝𝑝 and 𝑥𝑥3=𝑝𝑝, where 𝑝𝑝 is a positive rational number. Evaluate square roots of small perfect squares (up to 100) and cube roots of small perfect cubes (up to 64). Know that √2 is irrational. (CCSS: 8.EE.A.2)**  **1. Demonstrate informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. Define irrational numbers as numbers that are not rational. (CCSS: 8.NS.A.1)**  **2. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., 𝜋𝜋2). For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations. (CCSS: 8.NS.A.2)**  **6. Explain a proof of the Pythagorean Theorem and its converse. (CCSS: 8.G.B.6)**  **7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. (CCSS: 8.G.B.7)**  **8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. (CCSS: 8.G.B.8)** | | **Essential Questions:**  How can I use knowledge of perfect squares to estimate the value of a non-perfect square?  How can I determine the distance between two points?  How can I determine right angles using the converse of the Pythagorean Theorem? | **Skills:**  **Estimate a non-perfect square to one decimal place.**  **Determine the length of a missing side of a right triangle**  **Given the length of the 3 sides of a triangle Determine if a triangle is a right triangle.**  **Find the distance between two non-vertical or non-horizontal points on a coordinate plane.** | **Standards:**  **8.NS.A. The Number System: Know that there are numbers that are not rational, and approximate them by rational numbers.**  **8.G.B. Geometry: Understand and apply the Pythagorean Theorem.**  **8.EE.A. Expressions & Equations: Work with radicals and integer exponents.** | **Instructional Strategies and Activities:** Embedded Intervention  Turn and Talks  Reflection and justification through writing  Direct Instruction/Investigation  Group/ Partner/ Independent Practice  Content and Academic vocabulary instruction  Exit Tickets/ Checks for Understanding | **Resources:**  **HMH Modules 10 and 11** | **Assessment:**  **ACCESS for ELLs (K-12)** Jan 11- Feb 12  **TS Gold** **(PS & PK)** All year |
| Differentiation  ELD/SPED/  GT/504/Other | **Key Vocabulary:**  rational, irrational, pi, Pythagorean’s Theorem, hypotenuse, legs, square root, perfect square, non-perfect squares | | **Activities to engage background knowledge**:  Generate a diagram of the area of squares with positive integer side lengths. | **Identified Language Forms & Functions:**  Sequence  Explain and Describe  [Explain/Describe,](https://drive.google.com/file/d/1_Z7LhKZGmN0z6IB0O2clHS3_ljZWHLLy/view?usp=sharing) [Opinion](https://drive.google.com/file/d/1_Z7LhKZGmN0z6IB0O2clHS3_ljZWHLLy/view?usp=sharing), [Sequence](https://drive.google.com/file/d/1SyigG2eFPGnKY4Ep-DO7abv1r32DKlns/view?usp=sharing), [Cause/Effect](https://drive.google.com/file/d/1UIwaI22Fu9NcO6_rLPrAnceSQGT8nyw_/view?usp=sharing), [Compare/Contrast](https://drive.google.com/file/d/1vIdmxyYPb6yRpTJs2PyUoXnk1kOdMV1-/view?usp=sharing)) | **Sentence Frames:**  **To estimate \_\_\_\_\_\_ first it is between \_\_\_ and blank \_\_\_\_\_\_ but closer to \_\_\_\_\_\_.**  **\_\_\_\_\_\_ is a right triangle because \_\_\_\_\_\_\_\_**  **The length of \_\_\_\_\_\_ is \_\_\_\_ because \_\_\_\_\_\_\_.** | **Language and/or Student Interaction Strategy:**  **Drawing the right triangles and applying measurement to prove/confirm calculations**  **partner station work to solve real-world problems**  1 Step Pass | **Supports/Scaffolds:**  Calculators  Square root charts  Perfect Square Charts  Number Lines | **Differentiation/Accommodations**:  Extend- with non-square shapes off of the legs  visual proof of Pythagorean’s Theorem (water proof) |
| Unit 7  Scientific Notation and Exponent Rules  **MARCH**  **(18 days)** | **Topics:**  **1. Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32×3−5=3−3=133=127. (CCSS: 8.EE.A.1)**  **3. Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 times 108 and the population of the world as 7 times 109, and determine that the world population is more than 20 times larger. (CCSS: 8.EE.A.3)**  **4. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology. (CCSS: 8.EE.A.4)** | | **Essential Questions:**  How can I use scientific notation and exponent rules to perform calculations with very large and very small numbers? | **Skills:**  **Generate equivalent expressions using properties of exponents**  **Convert numbers between standard and scientific notation**  **Perform calculations with numbers in scientific notation** | **Standards: 8.EE.A. Expressions & Equations: Work with radicals and integer exponents.** | **Instructional Strategies and Activities:** Embedded Intervention  Turn and Talks  Reflection and justification through writing  Direct Instruction/Investigation  Group/ Partner/ Independent Practice  Content and Academic vocabulary instruction  Exit Tickets/ Checks for Understanding | **Resources:**  **HMH Module 11** | **Assessment:**  **ACCESS for ELLs (K-12)** Jan 11- Feb 12  **TS Gold** **(PS & PK)** All year |
| Differentiation  ELD/SPED/  GT/504/Other | **Key Vocabulary:**  base number, power, exponent, scientific notation, standard form | | **Activities to engage background knowledge**:  Explore place value through powers of 10. (Base 10 number system) | **Identified Language Forms & Functions:**  Explain/Describe | **Sentence Frames:**  \_\_\_\_\_\_ is equal to \_\_\_\_\_\_\_ because \_\_\_\_\_\_\_\_.  Based on \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_ is more easily written as \_\_\_\_\_\_\_\_ because \_\_\_\_\_\_. | **Language and/or Student Interaction Strategy:**  **Investigation method for discovering rules**  **Sentence frames for verbal and written communication** | **Supports/Scaffolds:**  Place value chart  Exponent rules chart/organizer | **Differentiation/Accommodations**  Extend- Use multiple exponent rules to simplify expressions:  Solar system extension (look for overlaps with Science) |
| Unit 8  Volume of Solids  **APRIL**  **(15 days)** | **Topics:**  **9. State the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. (CCSS: 8.G.C.9)** | | **Essential Questions:** How can I determine how much space is inside cylinders, cones, and spheres? | **Skills:**  **Calculate the volume of cylinders, cones, and spheres** | **Standards:**  **8.G.C. Geometry: Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.** | **Instructional Strategies and Activities:** Embedded Intervention  Turn and Talks  Reflection and justification through writing  Direct Instruction/Investigation  Group/ Partner/ Independent Practice  Content and Academic vocabulary instruction  Exit Tickets/ Checks for Understanding | **Resources:**  **HMH Modules 12** | **Assessment:**  **District Common Formative Assessments (4-8)** 3rd: Mar 1- Mar 10  **TS Gold** **(PS & PK)** All year |
| Differentiation  ELD/SPED/  GT/504/Other | **Key Vocabulary:**  volume, cylinder, sphere, cone, cube, square, root, radius, diameter, pi, solid, height | | **Activities to engage background knowledge**:  Radius/Diameter/pi  Areas of circles  Distinguish between cylinders, cones, and spheres | **Identified Language Forms & Functions:**  Explain/describe  Sequence | **Sentence Frames:**  **The volume of \_\_\_\_\_ is \_\_\_\_\_\_ because \_\_\_\_\_**  **To calculate the volume of a \_\_\_\_\_, first I \_\_\_\_\_\_, then I \_\_\_\_\_\_\_\_.** | **Language and/or Student Interaction Strategy:**  volume candy challenge and writing support  team-based problem solving | **Supports/Scaffolds:**  visual solids,  volume formulas  visual vocabulary/guided notes  Calculator | **Differentiation/Accommodations**:  Extend- Given a volume, find the height or radius  paper (landscape vs portrait) volume challenge |
| **Unit 9**  Angles and Parallel Lines  **MAY**  **(21.5 days)** | **Topics:**  **Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so. (CCSS: 8.G.A.5)** | | **Essential Questions:**  How can I determine the relationship between angles created by parallel lines and a transversal? | **Skills:**  **Identify the measure of missing angles created by a transversal and parallel lines.**  **Justify why an angle is a given measure using precise vocabulary.**  **Calculate the measure of a missing angle of a triangle** | **Standards: 8.G.A. Geometry: Understand congruence and similarity using physical models, transparencies, or geometry software.** | **Instructional Strategies and Activities:** Embedded Intervention  Turn and Talks  Reflection and justification through writing  Direct Instruction/Investigation  Group/ Partner/ Independent Practice  Content and Academic vocabulary instruction  Exit Tickets/ Checks for Understanding | **Resources:**  **HMH Module 4** | **Assessment:**  **Acadience (K-5)** EOY: April 27- May 8  **CMAS (3-8)** Apr 12- Apr 30  **CoAlt (3-12)** Apr 12- Apr 30  **PSAT/SAT (9-11)** Apr 13 & 14  **STAR Reading** **(1-11)** EOY: April 27- May 8  **STAR Math (3-11)** EOY: April 27- May 8  **TS Gold** **(PS & PK)** All year |
| Differentiation  ELD/SPED/  GT/504/Other | **Key Vocabulary:**  exterior angle, Exterior Angle Theorem, interior angle, Triangle Sum Theorem, transversal, corresponding angles, supplementary, complementary, vertical, adjacent | | **Activities to engage background knowledge**:  Supplementary Angles- Roads, sports, train tracks. | **Identified Language Forms & Functions:**  Cause/Effect | **Sentence Frames:**  **Angle \_\_\_\_ causes angle \_\_\_ to be \_\_\_ degrees because \_\_\_\_\_\_\_.** | **Language and/or Student Interaction Strategy:**  Turn and talk with speaking frames  Intro to Geometric Proofs- Justify with writing  Rally Coach | **Supports/Scaffolds:**  color coding angles  calculators  protractors  graphic organizer for vocabulary  visual vocabulary word wall/anchor chart | **Differentiation/Accommodations**  :Extend- Replace given angle with one or 2 step equations |