



Essential Content Framework

A Beginning-of-Year Success Plan for Educators *HMH Algebra 1*, copyright 2015, 2018

As schools enter the 2020–2021 academic year, educators will be challenged with meeting students’ needs for the current school year while addressing learning gaps produced as a result of COVID-19 related school closures from the previous school year.

Working with the International Center for Leadership in Education (ICLE), HMH has identified the highest-priority standards for you to focus on. These priority standards are built from hundreds of projects with thousands of educators around the country, which consistently show that prioritizing standards results in learning gains for ALL students, particularly students who are behind, and regardless of whether they have experienced disrupted learning.

Using these priority standards, HMH has developed this Essential Content Framework as a guidance document that supplements the planning resources and tools. The Framework allows educators to focus on those standards most critical to a student’s success in achieving grade-level proficiency and above and providing specific content from prior learning that can be used for scaffolding and reteaching.

Use this Essential Content Framework in conjunction with your school or district’s scope-and-sequence documentation to identify critical skills, on-level lessons, and expected prior learning that support the priority standards.

Determine Student Needs


Get to know what skill strengths and challenges your students are bringing to the classroom at the beginning of the year.

- Consult data or feedback from the last academic year. Reach out to the previous grade’s teachers to find out whether they have any advice that you should consider as you start the year.

- The *Assessment Resources* ancillary for Algebra 1 includes a Placement Test that is correlated to Grade 8 standards and allows you to create an Individual Student Profile showing what students know at the start of the school year.
- As you begin each module in Algebra 1, use the **Are You Ready?** quiz to diagnose students' preparedness for the module. The quiz focuses on prerequisite skills for the module, and students who need help with those skills can get it through the *Response to Intervention* ancillary, which includes Tier 1, Tier 2, and Tier 3 interventions.

Response to Intervention



| UNIT 1 QUANTITIES AND MODELING | | | | | | |
|--|---------------|-----------|--|----------------------|--|--|
| Student Edition Lessons | Tier 1 Skills | Pre-Tests | Tier 2 Skills Strategic Intervention | Post-Tests | Tier 3 Skills Intensive Intervention | |
| Module 1 Quantitative Reasoning | | | | | | |
| 1.1 Solving Equations | Reteach 1-1 | Module 1 | 13 One-Step Equations | Skill 13 |  Building Block (Tier 3) worksheets are available online for students who need additional support on prerequisite skills. See the teacher page of each Tier 2 Skill lesson for a list of Building Block skills. | |
| 1.2 Modeling Quantities | Reteach 1-2 | | 17 Scale Factor and Scale Drawings | Skill 17 | | |
| 1.3 Reporting with Precision and Accuracy | Reteach 1-3 | | 19 Significant Digits 24 Writing Linear Equations | Skill 19 Skill 24 | | |
| Module 2 Algebraic Models | | | | | | |
| 2.1 Modeling with Expressions | Reteach 2-1 | Module 2 | 2 Algebraic Expressions | Skill 2 | | |
| 2.2 Creating and Solving Equations | Reteach 2-2 | | 13 One-Step Equations | Skill 13 | | |
| 2.3 Solving for a Variable | Reteach 2-3 | | 14 One-Step Inequalities | Skill 14 | | |
| 2.4 Creating and Solving Inequalities | Reteach 2-4 | | 21 Two-Step Equations | Skill 21 | | |
| 2.5 Creating and Solving Compound Inequalities | Reteach 2-5 | | 22 Two-Step Inequalities | Skill 22 | | |

- You can use the Personal Math Trainer on my.hrw.com to administer the **Are You Ready?** quizzes and other assessments.

Personal Math Trainer **Mod 1 Quantitative Reasoning - Are You Ready?** HMH

1 2 3 4 5 6 7 8 9

Question Print All Standards

Solve the equation.

$2x = 16$

$x =$

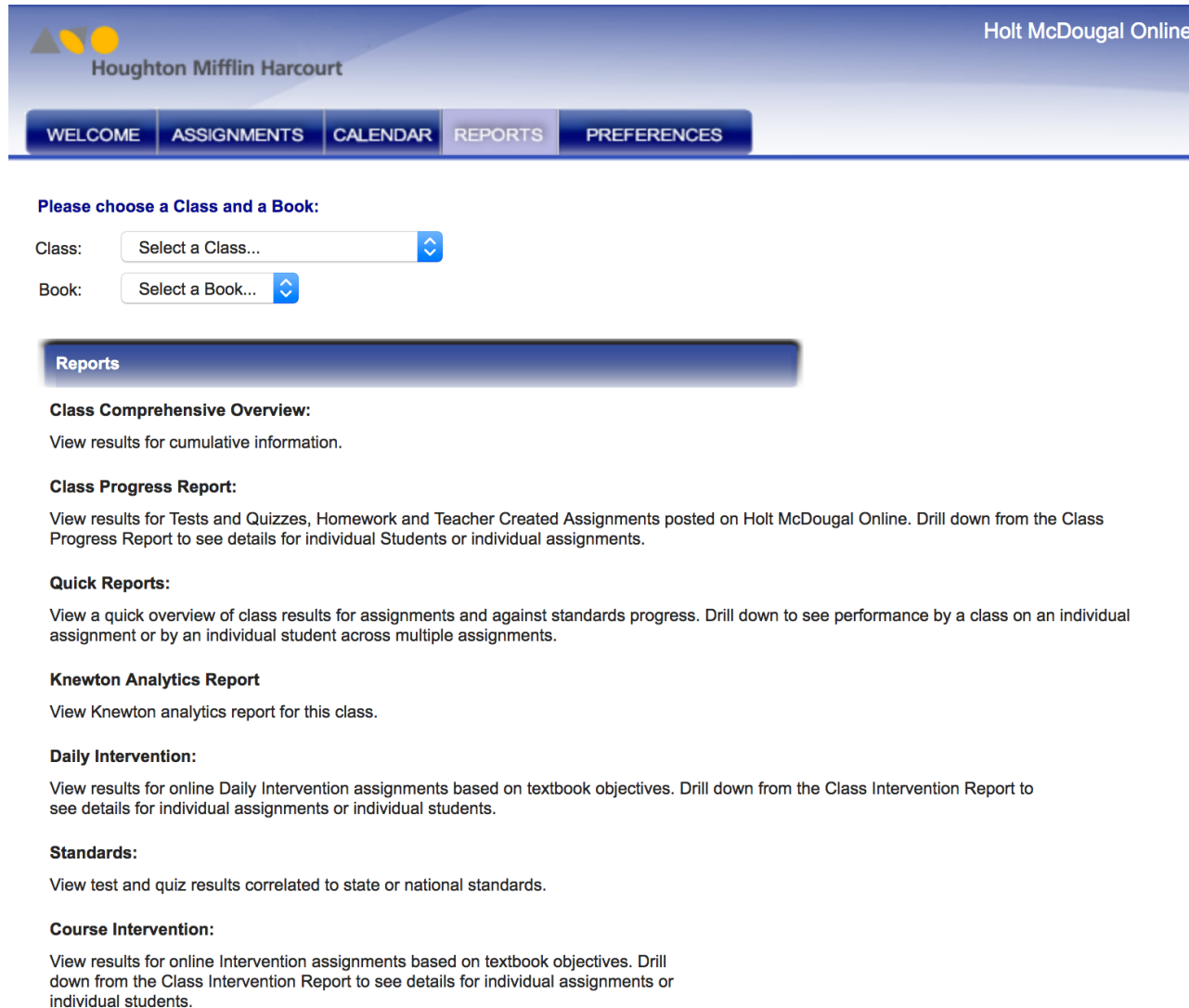
- Throughout the course, you can use the Personal Math Trainer to give homework assignments that include learning aids such as feedback, worked-out examples, step-by-step interactive solutions, access to a PDF of the textbook, and Math on the Spot videos.
- Special types of homework assignments available with the Personal Math Trainer provide personalized intervention that is delivered either before or after the assignments.

Please choose an assignment type:

- Category: Daily Intervention
 Standard-Based Intervention
 Course Intervention
 Tests and Quizzes
 Homework
- Grade:
- Show c

Submit
Create

- When students use the Personal Math Trainer, you can generate a variety of reports of student performance.



Houghton Mifflin Harcourt Holt McDougal Online

WELCOME ASSIGNMENTS CALENDAR **REPORTS** PREFERENCES

Please choose a Class and a Book:

Class:

Book:

Reports

Class Comprehensive Overview:
View results for cumulative information.

Class Progress Report:
View results for Tests and Quizzes, Homework and Teacher Created Assignments posted on Holt McDougal Online. Drill down from the Class Progress Report to see details for individual Students or individual assignments.

Quick Reports:
View a quick overview of class results for assignments and against standards progress. Drill down to see performance by a class on an individual assignment or by an individual student across multiple assignments.

Knewton Analytics Report
View Knewton analytics report for this class.

Daily Intervention:
View results for online Daily Intervention assignments based on textbook objectives. Drill down from the Class Intervention Report to see details for individual assignments or individual students.

Standards:
View test and quiz results correlated to state or national standards.

Course Intervention:
View results for online Intervention assignments based on textbook objectives. Drill down from the Class Intervention Report to see details for individual assignments or individual students.

Focus on the Priority Standards

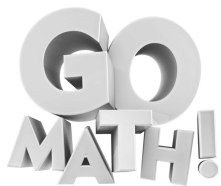
Organized in a way to supplement the Pacing Guides found at the beginning of each unit in the Algebra 1 Teacher Edition, this Essential Content Framework is intended to provide instructional plans and access to interventions that will allow for students' learning gaps to be addressed throughout the school year.

- Starting on the next page is a list of the HMH Priority Standards for Algebra 1. The lessons in *HMH Algebra 1* that address each standard are also listed. Note that Modules 4, 8, 11, 14, and 18 do not address any HMH Priority Standards. You should consider your own school's or district's scope and sequence for an Algebra 1 course to decide whether and when to teach those modules.
- When you teach a lesson, you can use the formative assessment built into the lesson to gauge student understanding of the lesson's concepts and skills. The formative assessment includes Reflect questions and Your Turn problems after each Explore and Explain section in the lesson as well as the Elaborate questions after the last Explain section.
- The *Differentiated Instruction* ancillary provides leveled practice that allows you to tailor homework to the needs of your students. Each lesson ends with a Lesson Performance Task that takes students beyond routine practice and provides an opportunity for them to work collaboratively.
- If students encounter difficulties mastering the Priority Standards, it may be due to inadequate prior learning of prerequisite concepts and skills. The list of Priority Standards starting on the next page identifies one or more prerequisite standards for each Priority Standard as well as earlier lessons within the *Go Math!* series that address the prerequisite standards. You may want to revisit those earlier lessons to help students succeed with the current lesson. One way to do this is to use the Reteach worksheets for the lessons that address prerequisite standards.
 - For high school lessons, the Reteach worksheets can be found in the *Response to Intervention* ancillaries.
 - For middle school lessons, the Reteach worksheets can be found in the *Differentiated Instruction* ancillaries.

Algebra 1 Priority Standards and Prerequisite Standards

| Priority Standards for Algebra 1 (An asterisk denotes a modeling standard.) | Algebra 1 Lessons that Address the Priority Standards | Prerequisite Middle School or High School Standards for the Priority Standards | Go Math Lessons or Modules that Address the Prerequisite Standards |
|---|---|--|--|
| <p>Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.*</p> | <p>1.2, 1.3, 7.1, 9.2, 9.3, 9.4</p> | <p>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.</p> <ul style="list-style-type: none"> • Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. | <p>Go Math, Grade 6: Lesson 7.3: Converting Within Measurement Systems Lesson 7.4: Converting Between Measurement Systems</p> |

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|---|---|---|---|
| <p>Interpret expressions that represent a quantity in terms of its context.*</p> <ul style="list-style-type: none"> Interpret complicated expressions by viewing one or more of their parts as a single entity. <i>For example, interpret $P(1 + r)^n$ as the product of P and a factor not depending on P.</i> | 2.1, 17.1 | <p>Write, read, and evaluate expressions in which letters stand for numbers.</p> <ul style="list-style-type: none"> 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. <i>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.</i> | <p>Go Math, Grade 6: Lesson 10.1: Modeling and Writing Expressions Lesson 10.2: Evaluating Expressions</p> |
| <p>Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.*</p> <ul style="list-style-type: none"> Factor a quadratic expression to reveal the zeros of the function it defines. | 20.3, 21.1, 21.2, 21.3, 22.2 | <p>Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> | <p>Go Math, Grade 7: Lesson 6.1: Algebraic Expressions</p> |

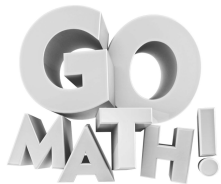


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| <p>Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.*</p> <ul style="list-style-type: none"> • Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. | 22.2 | Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. | Go Math, Grade 7: Lesson 6.1: Algebraic Expressions |
| <p>Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.*</p> <ul style="list-style-type: none"> • Use the properties of exponents to transform expressions for exponential functions. <i>For example the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.</i> | 16.1 | Know and apply the properties of integer exponents to generate equivalent numerical expressions. <i>For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.</i> | Go Math, Grade 8: Lesson 2.1: Integer Exponents |

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| <p>Create equations and inequalities in one variable and use them to solve problems. <i>Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*</i></p> | <p>2.2, 2.4, 2.5, 13.3, 13.4, 16.1, 20.3, 21.1, 21.2, 21.3, 22.1, 22.3, 22.4</p> | <p>Solve linear equations in one variable.</p> <ul style="list-style-type: none"> Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. <p>Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.</p> <ul style="list-style-type: none"> Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. <i>For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.</i> | <p>Go Math, Grade 8: Module 7: Solving Linear Equations</p> <p>Go Math, Grade 7: Module 7: Inequalities</p> |

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| <p>Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. <i>For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.*</i></p> | <p>2.2, 2.4, 2.5, 7.1, 7.3, 12.1, 12.2, 12.3</p> | <p>Analyze and solve pairs of simultaneous linear equations.</p> <ul style="list-style-type: none"> Solve real-world and mathematical problems leading to two linear equations in two variables. <i>For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.</i> <p>Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.</p> <ul style="list-style-type: none"> Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. <i>For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?</i> Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. <i>For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.</i> | <p>Go Math, Grade 8: Module 8: Solving Systems of Linear Equations</p> <p>Go Math, Grade 7: Lesson 6.3: Writing Two-Step Equations Lesson 6.4: Solving Two-Step Equations Lesson 7.2: Writing Two-Step Inequalities Lesson 7.3: Solving Two-Step Inequalities</p> |

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| <p>Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.</p> | <p>1.1, 2.2</p> | <p>Apply the properties of operations to generate equivalent expressions. <i>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 $3y$.</i></p> | <p>Go Math, Grade 6: Lesson 10.3: Generating Equivalent Expressions</p> |
| <p>Solve quadratic equations in one variable.</p> <ul style="list-style-type: none"> Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. | <p>22.2, 22.3</p> | <p>Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.</p> | <p>Go Math, Grade 8: Lesson 1.1: Rational and Irrational Numbers</p> |



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| <p>Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.*</p> | <p>7.2, 13.3, 13.4, 16.1, 16.3, 20.1, 22.5, 23.1</p> | <p>Analyze and solve pairs of simultaneous linear equations.</p> <ul style="list-style-type: none"> Understand 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. | <p>Go Math, Grade 8: Lesson 8.1: Solve Systems of Linear Equations by Graphing</p> |

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| <p>Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x. The graph of f is the graph of the equation $y = f(x)$.</p> | <p>3.2, 3.3, 3.4</p> | <p>Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.</p> | <p>Go Math, Grade 8: Lesson 6.1: Identifying and Representing Functions</p> |
| <p>For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. <i>Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*</i></p> | <p>3.1, 5.2, 16.2, 19.1, 19.2, 19.3, 23.1</p> | <p>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.</p> | <p>Go Math, Grade 8: Lesson 6.4: Analyzing Graphs</p> |

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| <p>Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.</i></p> | <p>6.5, 15.5</p> | <p>Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>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.</i></p> | <p>Go Math, Grade 8: Lesson 6.3: Comparing Functions</p> |
| <p>Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. <i>Include recognizing even and odd functions from their graphs and algebraic expressions for them.</i></p> | <p>6.4, 13.2, 15.5, 19.1, 19.2, 24.1, 24.3, 24.4</p> | <p>Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.</p> | <p>Go Math, Grade 8: Lesson 9.4: Algebraic Representations of Transformations Lesson 10.2: Algebraic Representations of Dilations</p> |

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| Interpret the parameters in a linear or exponential function in terms of a context.* | 5.2, 5.3, 6.4, 10.1, 10.2, 12.1 | 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 (x, y) 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. | Go Math, Grade 8: Lesson 4.2: Determining Slope and y -intercept |

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| <p>Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.*</p> | <p>9.1, 9.2, 9.3, 9.4</p> | <p>Summarize numerical data sets in relation to their context, such as by:</p> <ul style="list-style-type: none"> • 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. • 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. | <p>Go Math, Grade 6: Module 16: Displaying, Analyzing, and Summarizing Data</p> |

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| <p>Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.*</p> <ul style="list-style-type: none"> Fit a function to the data; use functions fitted to data to solve problems in the context of the data. <i>Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.</i> | <p>10.1, 10.2, 16.3, 23.1, 23.2</p> | <p>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.</p> <p>Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. <i>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.</i></p> | <p>Go Math, Grade 8: Module 14: Scatter Plots</p> |