Houghton
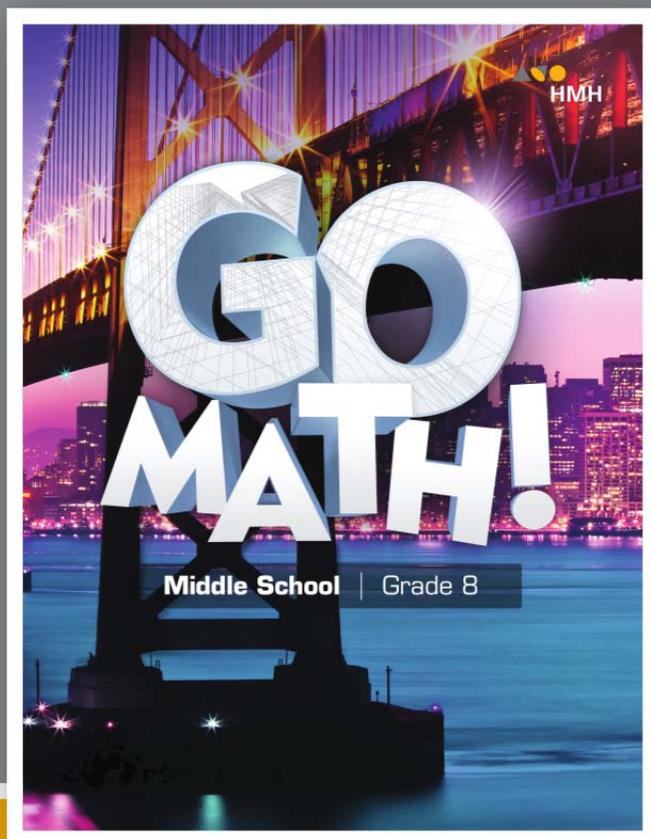Mifflin
Harcourt

HMH

GO MATH!

Middle School | Grade 8

Correlation to the
Oklahoma Academic Standards
for Mathematics
Grade 8

Houghton Mifflin Harcourt
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Grade 8/Pre-Algebra

Citations	Standard	Descriptor
PA.N.1 Read, write, compare, classify, and represent real numbers and use them to solve problems in various contexts.		
SE: 33–38	PA.N.1.1	Develop and apply the properties of integer exponents, including $a^0 = 1$ (with $a \neq 0$), to generate equivalent numerical and algebraic expressions.
SE: 39–44, 45–50	PA.N.1.2	Express and compare approximations of very large and very small numbers using scientific notation.
SE: 51–56	PA.N.1.3	Multiply and divide numbers expressed in scientific notation, express the answer in scientific notation.
SE: 15-20, 21-26 Online Lesson: 1	PA.N.1.4	Classify real numbers as rational or irrational. Explain why the rational number system is closed under addition and multiplication and why the irrational system is not. Explain why the sum of a rational number and an irrational number is irrational; and the product of a non-zero rational number and an irrational number is irrational.
SE: 7-14, 21–26	PA.N.1.5	Compare real numbers; locate real numbers on a number line. Identify the square root of a perfect square to 400 or, if it is not a perfect square root, locate it as an irrational number between two consecutive positive integers.
PA.A.1 Understand the concept of function in real-world and mathematical situations, and distinguish between linear and nonlinear functions.		
SE: 77-82, 153–160, 161-160, 161-166, 167-172	PA.A.1.1	Recognize that a function is a relationship between an independent variable and a dependent variable in which the value of the independent variable determines the value of the dependent variable.
SE: 107-112, 127-132, 133-138, 153-160, 161-166, 167-172	PA.A.1.2	Use linear functions to represent and explain real-world and mathematical situations.

Citations	Standard	Descriptor
SE: 95-100, 101-106, 107-112, 113-120, 133-138, 139-146, 161–166	PA.A.1.3	Identify a function as linear if it can be expressed in the form $y = mx + b$ or if its graph is a straight line.
PA.A.2 Recognize linear functions in real-world and mathematical situations; represent linear functions and other functions with tables, verbal descriptions, symbols, and graphs; solve problems involving linear functions and interpret results in the original context.		
SE: 71-76, 77-82, 83-88, 95-100, 153-160, 167–172, 173-178	PA.A.2.1	Represent linear functions with tables, verbal descriptions, symbols, and graphs; translate from one representation to another.
SE: 71-76, 77-82, 83-88, 95-100, 101-106, 107-112, 113-120 Online Lesson: 2	PA.A.2.2	Identify, describe, and analyze linear relationships between two variables.
SE: 71-76, 77-82, 83-88, 95-100, 101–106, 107-112, 113-120, 127-132, 133-138, 161-166, 167-172	PA.A.2.3	Identify graphical properties of linear functions including slope and intercepts. Know that the slope equals the rate of change, and that the y-intercept is zero when the function represents a proportional relationship.
Online Lesson: 3	PA.A.2.4	Predict the effect on the graph of a linear function when the slope or y-intercept changes. Use appropriate tools to examine these effects.
SE: 161–166, 167–172	PA.A.2.5	Solve problems involving linear functions and interpret results in the original context.
PA.A.3 Generate equivalent numerical and algebraic expressions and use algebraic properties to evaluate expressions.		
SE: 375-380, 381-386, 387-392	PA.A.3.1	Use substitution to simplify and evaluate algebraic expressions.
SE: 33-38 Online Lesson: 4	PA.A.3.2	Justify steps in generating equivalent expressions by identifying the properties used, including the properties of operations (associative, commutative, and distributive laws) and the order of operations, including grouping symbols.

Citations	Standard	Descriptor
PA.A.4 Represent real-world and mathematical problems using equations and inequalities involving linear expressions. Solve and graph equations and inequalities symbolically and graphically. Interpret solutions in the original context.		
SE: 127-132, 133-138, 139-146, 194-202, 203–208, 209–214, 215–220	PA.A.4.1	Illustrate, write, and solve mathematical and real-world problems using linear equations with one variable with one solution, infinitely many solutions, or no solutions. Interpret solutions in the original context.
Online Lesson: 5, 6	PA.A.4.2	Represent, write, solve, and graph problems leading to linear inequalities with one variable in the form $px + q > r$ and $px + q < r$, where p, q, and r are rational numbers.
SE: 127-132, 133-138, 139-146, 194-202, 203-208, 209-214, 215-220 Online Lesson: 5, 6	PA.A.4.3	Represent real-world situations using equations and inequalities involving one variable.
PA.GM.1 Solve problems involving right triangles using the Pythagorean Theorem.		
SE: 375–380, 381–386, 387-392	PA.GM.1.1	Informally justify the Pythagorean Theorem using measurements, diagrams, or dynamic software and use the Pythagorean Theorem to solve problems in two and three dimensions involving right triangles.
SE: 387–392	PA.GM.1.2	Use the Pythagorean Theorem to find the distance between any two points in a coordinate plane.
PA.GM.2 Calculate surface area and volume of three-dimensional figures.		
Online Lesson: 7	PA.GM.2.1	Calculate the surface area of a rectangular prism using decomposition or nets. Use appropriate measurements such as cm^2.
Online Lesson: 8, 10	PA.GM.2.2	Calculate the surface area of a cylinder, in terms of π and using approximations for π, using decomposition or nets. Use appropriate measurements such as cm^2.
Online Lesson: 9	PA.GM.2.3	Develop and use the formulas $V = lwh$ and $V = bh$ to determine the volume of rectangular prisms. Justify why base area (B) and height (h) are multiplied to find the volume of a rectangular prism. Use appropriate measurements such as cm^3.
SE: 399-404 Online Lesson: 10	PA.GM.2.4	Develop and use the formulas $V=\pi r^2$ and $V=bh$ to determine the volume of right cylinders, in terms of π and using approximations for π. Justify why base area (B) and height (h) are multiplied to find the volume of a right cylinder. Use appropriate measurements such as cm^3.

Citations	Standard	Descriptor
PA.D.1 Display and interpret data in a variety of ways, including using scatterplots and approximate lines of best fit. Use line of best fit and average rate of change to make predictions and draw conclusions about data.		
Online Lesson: 11	PA.D.1.1	Describe the impact that inserting or deleting a data point has on the mean and the median of a data set. Know how to create data displays using a spreadsheet and use a calculator to examine this impact.
Online Lesson: 11	PA.D.1.2	Explain how outliers affect measures of central tendency.
SE: 139-146, 433–438, 439–444	PA.D.1.3	Collect, display and interpret data using scatterplots. Use the shape of the scatterplot to informally estimate a line of best fit, make statements about average rate of change, and make predictions about values not in the original data set. Use appropriate titles, labels and units.
PA.D.2 Calculate experimental probabilities and reason about probabilities to solve real-world and mathematical problems.		
Online Lesson: 12	PA.D.2.1	Calculate experimental probabilities and represent them as percents, fractions and decimals between 0 and 1 inclusive. Use experimental probabilities to make predictions when actual probabilities are unknown.
Online Lesson: 14	PA.D.2.2	Determine how samples are chosen (random, limited, biased) to draw and support conclusions about generalizing a sample to a population.
Online Lesson: 13	PA.D.2.3	Compare and contrast dependent and independent events.