

Grade 8 Math TEKS and Related Prior Learning TEKS

| | Grade 8 Math TEKS/SE | Prior Learning TEKS/SE |
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| 8.2 | Number and operations. The student applies mathematical process standards to represent and use real numbers in a variety of forms. The student is expected to: | |
| 8.2A | extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers. | 7.2A extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of rational numbers. |
| 8.2B | approximate the value of an irrational number, including π and square roots of numbers less than 225, and locate that rational number approximation on a number line. | 6.2B identify a number, its opposite, and its absolute value. 6.2C locate, compare, and order integers and rational numbers using a number line. |
| 8.2C | convert between standard decimal notation and scientific notation. | 5.2A represent the value of the digit in decimals through the thousandths using expanded notation and numerals. |
| 8.2D | order a set of real numbers arising from mathematical and real-world contexts. | 6.2D order a set of rational numbers arising from mathematical and real-world contexts. |
| 8.3 | Proportionality. The student applies mathematical process standards to use proportional relationships to describe dilations. The student is expected to: | |
| 8.3A | generalize that the ratio of corresponding sides of similar shapes are proportional, including a shape and its dilation. | 7.5A generalize the critical attributes of similarity, including ratios within and between similar shapes |
| 8.3B | compare and contrast the attributes of a shape and its dilation(s) on a coordinate plane. | 7.5A generalize the critical attributes of similarity, including ratios within and between similar shapes |
| 8.3C | use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation. | 6.11A graph points in all four quadrants using ordered pairs of rational numbers. |
| 8.4 | Proportionality. The student applies mathematical process standards to explain proportional and non-proportional relationships involving slope. The student is expected to: | |
| 8.4A | use similar right triangles to develop an understanding that slope, m , given as the rate comparing the change in y -values to the change in x -values, $(y_2 - y_1) / (x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line. | 7.4B calculate unit rates from rates in mathematical and real-world problems. |

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| 8.4B | graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship. | 7.4B calculate unit rates from rates in mathematical and real-world problems. |
| 8.4C | use data from a table or graph to determine the rate of change or slope and y -intercept in mathematical and real-world problems. | 7.4B calculate unit rates from rates in mathematical and real-world problems. |
| 8.5 | Proportionality. The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions. The student is expected to: | |
| 8.5A | represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$. | 7.4A represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including $d = rt$. |
| 8.5B | represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$. | 7.7A represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$. |
| 8.5C | contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation | 5.9B represent discrete paired data on a scatterplot. |
| 8.5D | use a trend line that approximates the linear relationship between bivariate sets of data to make predictions. | |
| 8.5E | solve problems involving direct variation. | 7.4C determine the constant of proportionality ($k = y/x$) within mathematical and real-world problems. |
| 8.5F | distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$. | 6.6C represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$. |
| 8.5G | identify functions using sets of ordered pairs, tables, mappings, and graphs. | 6.6A identify independent and dependent quantities from tables and graphs. |
| 8.5H | identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems. | 6.6C represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$. |
| 8.5I | write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations. | 6.6B write an equation that represents the relationship between independent and dependent quantities from a table. |

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| 8.6 | Expressions, equations, and relationships. The student applies mathematical process standards to develop mathematical relationships and make connections to geometric formulas. The student is expected to: | |
| 8.6A | describe the volume formula $V = Bh$ of a cylinder in terms of its base area and its height. | 7.8A model the relationship between the volume of a rectangular prism and a rectangular pyramid having both congruent bases and heights and connect that relationship to the formulas. |
| 8.6B | model the relationship between the volume of a cylinder and a cone having both congruent bases and heights and connect that relationship to the formulas. | 7.8B explain verbally and symbolically the relationship between the volume of a triangular prism and a triangular pyramid having both congruent bases and heights and connect that relationship to the formulas. 7.8C use models to determine the approximate formulas for the circumference and area of a circle and connect the models to the actual formulas. |
| 8.6C | use models and diagrams to explain the Pythagorean theorem. | |
| 8.7 | Expressions, equations, and relationships. The student applies mathematical process standards to use geometry to solve problems. The student is expected to: | |
| 8.7A | solve problems involving the volume of cylinders, cones, and spheres. | 7.9B determine the circumference and area of circles. 7.9A solve problems involving the volume of rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids |
| 8.7B | use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving rectangular prisms, triangular prisms, and cylinders. | 7.9D solve problems involving the lateral and total surface area of a rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid by determining the area of the shape's net. |
| 8.7C | use the Pythagorean Theorem and its converse to solve problems. | |
| 8.7D | determine the distance between two points on a coordinate plane using the Pythagorean Theorem. | |

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| 8.8 | Expressions, equations, and relationships. The student applies mathematical process standards to use one-variable equations or inequalities in problem situations. The student is expected to: | |
| 8.8A | write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants. | 7.10A write one-variable, two- step equations and inequalities to represent constraints or conditions within problems. |
| 8.8B | write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants. | 7.10C write a corresponding real-world problem given a one-variable, two-step equation or inequality. |
| 8.8C | model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants. | 7.11A model and solve one- variable, two-step equations and inequalities. |
| 8.8D | use informal arguments to establish facts about the angle sum and exterior angle of triangles, the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. | 7.11C write and solve equations using geometry concepts, including the sum of the angles in a triangle, and angle relationships. |
| 8.9 | Expressions, equations, and relationships. The student applies mathematical process standards to use multiple representations to develop foundational concepts of simultaneous linear equations. | |
| 8.9A | The student is expected to identify and verify the values of x and y that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations. | 7.11B determine if the given value(s) make(s) one-variable, two-step equations and inequalities true. |
| 8.10 | Two-dimensional shapes. The student applies mathematical process standards to develop transformational geometry concepts. The student is expected to: | |
| 8.10A | generalize the properties of orientation and congruence of rotations, reflections, translations, and dilations of two-dimensional shapes on a coordinate plane. | 7.5A generalize the critical attributes of similarity, including ratios within and between similar shapes. 7.5B describe π as the ratio of the circumference of a circle to its diameter. |
| 8.10B | differentiate between transformations that preserve congruence and those that do not. | |
| 8.10C | explain the effect of translations, reflections over the x - or y -axis, and rotations limited to 90° , 180° , 270° , and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation. | 6.11A graph points in all four quadrants using ordered pairs of rational numbers. |

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| 8.10D | model the effect on linear and area measurements of dilated two-dimensional shapes. | 7.5C solve mathematical and real- world problems involving similar shape and scale drawings. |
| 8.11 | Measurement and data. The student applies mathematical process standards to use statistical procedures to describe data. The student is expected to: | |
| 8.11A | construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data. | 5.9B represent discrete paired data on a scatterplot. |
| 8.11B | determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using a data set of no more than 10 data points. | 7.12A compare two groups of numeric data using comparative dot plots or box plots by comparing their shapes, centers, and spreads. 6.12C summarize numeric data with numerical summaries, including the mean and median (measures of center) and the range and interquartile range (IQR) (measures of spread), and use these summaries to describe the center, spread, and shape of the data distribution. |
| 8.11C | simulate generating random samples of the same size from a population with known characteristics to develop the notion of a random sample being representative of the population from which it was selected. | 7.12C compare two populations based on data in random samples from these populations, including informal comparative inferences about differences between the two populations. |
| 8.12 | Personal financial literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to: | |
| 8.12A | solve real-world problems comparing how interest rate and loan length affect the cost of credit. | 6.14B distinguish between debit cards and credit cards. |
| 8.12B | calculate the total cost of repaying a loan, including credit cards and easy access loans, under various rates of interest and over different periods using an online calculator. | 6.14D explain why it is important to establish a positive credit history. 6.14E describe the information in a credit report and how long it is retained. |

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| 8.12C | explain how small amounts of money invested regularly, including money saved for college and retirement, grow over time. | 6.14G explain various methods to pay for college, including through savings, grants, scholarships, student loans, and work-study. |
| 8.12D | calculate and compare simple interest and compound interest earnings. | 7.13E calculate and compare simple interest and compound interest earnings. |
| 8.12E | identify and explain the advantages and disadvantages of different payment methods. | 6.14F describe the value of credit reports to borrowers and to lenders. |
| 8.12F | analyze situations to determine if they represent financially responsible decisions and identify the benefits of financial responsibility and the costs of financial irresponsibility. | |
| 8.12G | estimate the cost of a two-year and four-year college education, including family contribution, and devise a periodic savings plan for accumulating the money needed to contribute to the total cost of attendance for at least the first year of college. | 6.14G explain various methods to pay for college, including through savings, grants, scholarships, student loans, and work-study. |