

Eighth Grade Scope and Sequence

Number, Operation, and Quantitative Reasoning

| Content Objective (TEKS) (TAKS Obj. 1) | Process Objective (TEKS) (TAKS Obj. 6) | Topics | MSIC | TEXTEAMS Rethinking Middle School Mathematics | Resources |
|---|--|---|-------|---|-----------|
| 8.1.A Compare and order rational numbers in various forms including integers, percents, and positive and negative fractions and decimals | 8.14A Identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics 8.14.B Use a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness 8.14.C Select or develop an appropriate problem solving strategy 8.14.D Select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems 8.15.A Communicate mathematical ideas | Using real-life situations as context, <ul style="list-style-type: none"> • Compare and order rational numbers. • Express numbers in scientific notation with positive and negative exponents using a calculator • Select and use appropriate forms of rational numbers. • Select and use appropriate operations. • Justify selection and use of operations. • Add, subtract, multiply, and divide rational numbers. • Evaluate a solution for reasonableness. <p>Discussion should always include estimation and reasonableness.</p> | p. 44 | PR: What Does It Cost? PR: Centimeter: Inches PS: Pondering Pesos PS: Quilt Design | |
| 8.1.B Select and use appropriate forms of rational numbers to solve real-life problems including those involving proportional relationships | | | p. 46 | | |
| 8.1.D Express numbers in scientific notation, including negative exponents, in appropriate problem situations using a calculator | | | p. 49 | | |
| 8.2.A Select and use appropriate operations to solve problems and justify the selections | | | p. 51 | | |
| 8.2.B Add, subtract, multiply, and divide rational numbers in problem situations | | | p. 53 | | |
| 8.2.C Evaluate a solution | | | p. 55 | | |

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| for reasonableness | using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models 8.15.B Evaluate the effectiveness of different representations to communicate ideas 8.16.A Make conjectures from patterns or sets of examples and nonexamples 8.16.B Validate conclusions using mathematical properties and relationships | | | | |
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*8.1C addressed with Geometry applications

*8.2D addressed with Patterns

Patterns, Relationships, and Algebraic Thinking

| Content Objective (TEKS) (TAKS Obj. 1, 2, 3) | Process Objective (TEKS) (TAKS Obj. 6) | Topics | MSIC | TEXTEAMS Rethinking Middle School Mathematics | Resources |
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| 8.2.D Use multiplication by a constant factor (unit rate) to represent proportional relationships | 8.14A Identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics 8.14.B Use a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness 8.14.C Select or develop an appropriate problem solving strategy 8.14.D Select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems 8.15.A Communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic | Using concrete experiences and real-life situations, <ul style="list-style-type: none"> • Use an algebraic expression (that states the relationships between the x and y values) to find the nth term in a sequence • Generate different representations <ul style="list-style-type: none"> – Use data from a verbal description to generate a table, a graph, and an equation – Use data from a table to generate a verbal description, a table, and an equation – Use data from a graph to generate a verbal description, a table, and an equation – Use an equation to generate a problem situation and related data with a verbal description, a table, and a graph – • Solve problems using tables, graphs, and | p. 57 | PR: Short Stack, Please! PR: Jet Ski Rental PR: One Size Fits All | |
| 8.3.A Compare and contrast proportional and non-proportional relationships | | | p. 92 | AR: Moving with Technology AR: Stretching Sequences (finding nth term) | |
| 8.3.B Estimate and find solutions to application problems involving percents and proportional relationships such as similarity and rates | | | p. 94 | AR: Cross-Country Cycling AR: Making Connections Activities 3 and 4 | |
| 8.4.A Generate a different representation given one representation of data such as a table, graph, equation, or verbal description | | | p. 96 | AR: Cover Up (method) PR: Unit Rates PR: One Size Fits All PR: Centimeter: Inches | |
| 8.5.A Estimate, find, and justify solutions to application problems using appropriate tables, graphs, and algebraic equations | | | p. 100 | PR: Percent Bars NR: Shopping Spree (reference) | |
| 8.5.B Use an algebraic expression to find any | | | p. 103 | NR: Tax-n-Tip PS: To Pop or Not To Pop | |

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| <p>term in a sequence</p> <p>8.7.D Locate and name points on a coordinate plane using ordered pairs of rational numbers</p> | <p>mathematical models</p> <p>8.15.B Evaluate the effectiveness of different representations to communicate ideas</p> <p>8.16.A Make conjectures from patterns or sets of examples and nonexamples</p> <p>8.16.B Validate conclusions using mathematical properties and relationships effectiveness of different representations to communicate ideas</p> <p>8.16.B Validate conclusions using mathematical properties and relationships effectiveness of different representations to communicate ideas.</p> <p>8.16.A Make conjectures from patterns or sets of examples and nonexamples</p> <p>8.16.B Validate conclusions using mathematical properties and relationships effectiveness of different representations to communicate ideas</p> | <p>equations</p> <ul style="list-style-type: none"> - Estimate the solution - Determine the exact solution (using concrete models for equations as needed) - Justify the solution (reasonableness) <p>Using real-life situations as context,</p> <ul style="list-style-type: none"> • Use multiplication by a constant factor (unit rate) to represent proportional situations • Estimate and find solutions for problems involving <ul style="list-style-type: none"> - Percents - Rates - Similarity • Compare and contrast proportional and non-proportional situations <ul style="list-style-type: none"> - Table (ratio $y:x$ is constant (k) for proportional situations) - Graph (linear and passes through the origin for proportional situations) - Equation ($y=kx$ for proportional situations) <p>Describe the resulting effects on perimeter and</p> | <p>p. 151</p> | <p>PS: What a Dream!</p> | |
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| | | area when dimensions of a shape are changed proportionally | | | |
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Geometry and Measurement

| Content Objective (TEKS) (TAKS Obj. 1, 3, 4) | Process Objective (TEKS) (TAKS Obj. 6) | Topics | MSIC | TEXTEAMS Rethinking Middle School Mathematics | Resources |
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| 8.1.C Approximate (mentally and with calculators) the value of irrational numbers as they arise from problem situations | 8.14A Identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics 8.14.B Use a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness 8.14.C Select or develop an appropriate problem solving strategy 8.14.D Select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, | Transformational Geometry Similar figures <ul style="list-style-type: none"> • Generate similar shapes using dilations using scale factors <ul style="list-style-type: none"> – Enlargements – Reductions • Graph the dilations on a coordinate plane <ul style="list-style-type: none"> – Determine how an ordered pair changes under a specific dilation – Determine the relationship between the ordered pairs of the original image and the enlarged or reduced image • Find missing measurements using proportional relationships such as scale and constant of proportionality Graph reflections and translations on a coordinate plane <ul style="list-style-type: none"> • Examine reflections over | p. 47 | PR: A Real Cover-Up GM: Quadrilateral Quest GM: Park Path Designs | |
| 8.3.A Compare and contrast proportional and non-proportional relationships | | | p. 92 | GM: Translations GM: Reflections | |
| 8.3.B Estimate and find solutions to application problems involving percents and proportional relationships such as similarity and rates | | | p. 94 | GM: Investigating Properties of Triangles GM: Grass Fire GM: Are These Shapes Similar? | |
| 8.6.A Generate similar shapes using dilations including enlargements and reductions | | | p. 139 | GM: Skydiving GM: Third of a Prism/Make a Cone | |
| 8.6.B Graph dilations, reflections, and translations on a coordinate plane | | | p. 142 | PS: DeAnna’s Quilt PS: Build It And Box It | |

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| | estimation, and number sense to solve problems | the x and y axes | | | |
| 8.7.A Draw solids from different perspectives | 8.15.A Communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models | <ul style="list-style-type: none"> Determine how an ordered pair changes under a specific reflection or translation Determine the relationship between the ordered pairs of the original image and the reflected or translated image | p. 145 | PS: Tiptoe Through the Tulips | |
| 8.7.B Use geometric concepts and properties to solve problems in fields such as art and architecture | 8.15.B Evaluate the effectiveness of different representations to communicate ideas | | p. 146 | PS: Pizza Shack Problem | |
| 8.7.C Use pictures or models to demonstrate the Pythagorean Theorem | 8.16 | Plane Geometry | p. 149 | | |
| 8.7.D Locate and name points on a coordinate plane | | <ul style="list-style-type: none"> Use concrete models to develop the Pythagorean Theorem <ul style="list-style-type: none"> Cut apart squares Patty paper Approximate irrational numbers <ul style="list-style-type: none"> Generate fractional and decimal approximations for square roots by building squares Use the Pythagorean Theorem to find the hypotenuses for right triangles on a geoboard. Use a ruler to measure the hypotenuses. Use a calculator to estimate the length of the hypotenuse. Compare ruler and calculator estimates | p. 151 | | |
| 8.10.A Describe the resulting effects on perimeter and area when dimensions of a shape are changed proportionally | | | p. 179 | | |
| 8.8.A Find surface area of prisms and cylinders using concrete models and nets (two-dimensional models) | 8.8.A | | p. 167 | | |

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| <p>8.8B Connect models to formulas for volume of prisms, cylinders, pyramids, and cones</p> | | <p>Solid Geometry</p> <ul style="list-style-type: none"> • Draw solids from different perspectives <ul style="list-style-type: none"> – Identify vertices, faces, edges, bases, lateral faces, height, and slant height – Use nets and dot paper • Find surface area using nets • Use models to generate formulas for the volumes of <ul style="list-style-type: none"> – Prisms and pyramids – Cylinders and cones • Solve application problems involving surface area and volume <ul style="list-style-type: none"> – Estimation – Exact solutions using formulas • Describe the resulting effect on volume when dimensions of a solid are changed proportionally <ul style="list-style-type: none"> – Build models – Organize measurements with a table to examine ratios between dimensions and ratios between volumes – Look at the | <p>p. 169</p> | | | |
| <p>8.8.C Estimate answers and use formulas to solve application problems involving surface area and volume</p> | | | <p>p. 171</p> | | | |
| <p>8.9.A Use the Pythagorean Theorem to solve real-life problems</p> | | | <p>p. 174</p> | | | |
| <p>8.9.B Use proportional relationships in similar shapes to find missing measurements</p> | | | <p>p. 177</p> | | | |
| <p>8.10.B Describe the resulting effect on volume when dimensions of a solid are changed proportionally</p> | | | <p>p. 182</p> | | | |

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| | | expressions generated from the table to describe the effect | | | | |
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Probability and Statistics

| Content Objective (TEKS) (TAKS Obj. 5) | Process Objective (TEKS) (TAKS Obj. 6) | Topics | MSIC | TEXTEAMS Rethinking Middle School Mathematics | Resources |
|--|---|---|--------|--|-----------|
| 8.11.A Find the probabilities of compound events (dependent and independent) | 8.14A Identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics 8.14.B Use a problem solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness 8.14.C Select or develop an appropriate problem solving strategy 8.14.D Select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems | <ul style="list-style-type: none"> • Simulate compound events using different models <ul style="list-style-type: none"> – Dependent – Independent • Represent data graphically using histograms, circle graphs, and bar graphs (with and without technology) • Find the theoretical probabilities of compound events <ul style="list-style-type: none"> – Dependent – Independent • Determine the difference between independent and dependent probability <ul style="list-style-type: none"> – Experimental – Theoretical • Make predictions and decisions based on theoretical and experimental probabilities • Select the appropriate measure of central tendency in a problem situation <p>Collect data using a variety of sample groups</p> <ul style="list-style-type: none"> • Examine relationships between groups using scatterplots (ex. Heights of boys to heights of girls) <ul style="list-style-type: none"> – Verbally describe the relationship between the two variables is a relationship | p. 214 | PR: What Did You Expect? Activity 3 | |
| 8.11.B Use theoretical probabilities and experimental results to make predictions and decisions | | | p. 216 | PS: Is It Fair? | |
| 8.11.C Select and use different models to simulate an event | | | p. 218 | PS: Library Research | |
| 8.12.A Select the appropriate measure of central tendency to describe a set of data for a particular purpose | | | p. 220 | | |
| 8.12.B Draw conclusions and make predictions by analyzing trends in scatterplots | | | p. 222 | | |
| 8.12.C Construct circle graphs, bar graphs, and histograms, with and without technology | | | p. 224 | | |
| 8.13.A Evaluate methods of sampling to determine | | | p. 227 | | |

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| <p>validity of an inference made from a set of data</p> | <p>8.15.A Communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models 8.15.B Evaluate the effectiveness of different representations to communicate ideas 8.16.A Make conjectures from patterns or sets of examples and nonexamples 8.16.B Validate conclusions using mathematical properties and relationships</p> | <p>exists</p> <ul style="list-style-type: none"> - Sketch trends lines onto scatterplots to make predictions • Examine characteristics of the groups using circle graphs, bar graphs, and histograms <ul style="list-style-type: none"> - Make inferences based on the data - Discuss what would happen to the graphs if the sample size was increased - Using different scales, create bar graphs for a set of data to illustrate the misuse of graphical and numerical information • Examine and evaluate graphs and conclusions based on the graphs to determine if the graphs are misrepresentations of the data | | | |
| <p>8.13.B Recognize misuses of graphical or numerical information and evaluate predictions and conclusions based on data analysis</p> | | | <p>p. 229</p> | | |