

Northpoint Horizons

Math Elevations™ (Comprehensive Intervention System)

Correlated to

Pennsylvania State Academic Standards

This document provides a sampling of the extensive math directives offered throughout the *Math Elevations* program that meet **Pennsylvania State Academic Standards.**

Grade 8 State Academic Standards	<i>Math Elevations</i> Level F Teacher's Guide Examples/Lessons	<i>Math Elevations</i> Level G Teacher's Guide Examples/Lessons	<i>Math Elevations</i> Level H Teacher's Guide Examples/Lessons
2.1. Numbers, Number Systems and Number Relationships			
A. Represent and use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, exponents, scientific notation, square roots).	Unit 1 – Lesson 2: <i>Understanding Exponents</i> pp. 20–21 Lesson 3: <i>Powers of 10</i> pp. 22–23 Unit 3 – Lesson 2: <i>Comparing and Ordering Fractions</i> pp. 56–57 Lesson 3: <i>Converting Fractions to Decimals</i> pp. 58–59 Lesson 4: <i>Understanding Percents</i> pp. 60–61 Lesson 5: <i>Converting Between Percents, Fractions, and Decimals</i> pp. 62–63 Lesson 6: <i>More Converting Fractions</i> pp. 64–65	Unit 1 – Lesson 2: <i>Exponents</i> pp. 22–24 Lesson 3: <i>Square Roots</i> pp. 25–27 Lesson 4: <i>Scientific Notation</i> pp. 28–30 Lesson 8: <i>Fractions and Mixed Numbers</i> pp. 40–43 Unit 2 – Lesson 8: <i>Fraction and Decimals</i> pp. 68–71	Unit 1 – Lesson 7: <i>Exponents</i> pp. 37–39 Lesson 8: <i>Square Roots</i> pp. 40–42 Unit 2 – Lesson 6: <i>Rules of Exponents</i> pp. 62–64 Lesson 7: <i>Negative and Zero Exponents</i> pp. 65–67 Lesson 8: <i>Scientific Notation</i> pp. 68–70 Unit 4 – Lesson 4: <i>Fractions, Decimals, and Percents</i> pp. 114–116
B. Simplify numerical expressions involving exponents, scientific notation and using order of operations.	Unit 1 – Lesson 2: <i>Understanding Exponents</i> pp. 20–21 Lesson 3: <i>Powers of 10</i> pp. 22–23 Unit 5 – Lesson 1: <i>Order of Operations</i> pp. 90–91	Unit 1 – Lesson 2: <i>Exponents</i> pp. 22–24 Lesson 4: <i>Scientific Notation</i> pp. 28–30 Unit 4 – Lesson 1: <i>Order of Operations</i> pp. 100–102	Unit 1 – Lesson 7: <i>Exponents</i> pp. 37–39 Lesson 8: <i>Square Roots</i> pp. 40–42 Unit 2 – Lesson 6: <i>Rules of Exponents</i> pp. 62–64 Lesson 7: <i>Negative and Zero</i>

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			<i>Exponents</i> pp. 65–67 Unit 2 – Lesson 8: <i>Scientific Notation</i> pp. 68–70 Unit 3 – Lesson 2: <i>Order of Operations</i> pp. 78–80
C. Distinguish between and order rational and irrational numbers.	Unit 1 – Lesson 1: <i>Decimals</i> pp. 18–19 Lesson 2: <i>Understanding Exponents</i> pp. 20–21 Lesson 3: <i>Powers of 10</i> pp. 22–23 Lesson 4: <i>Introduction to Integers</i> pp. 24–25	Unit 1 – Lesson 1: <i>Decimal Place Value</i> pp. 18– 21	Unit 1 – Lesson 8: <i>Square Roots</i> pp. 40-42
D. Apply ratio and proportion to mathematical problem situations involving distance, rate, time and similar triangles.	Unit 3 – Lesson 7: <i>Ratios and Proportions</i> pp. 66–67 Lesson 8: <i>Solving Proportions</i> pp. 68–69	Unit 5 – Lesson 1: <i>Ratios</i> pp. 128–131 Lesson 2: <i>Rates</i> pp. 132–134 Lesson 3: <i>Writing and Solving Proportions</i> pp. 135–137	Unit 4 – Lesson 1: <i>Ratios and Rates</i> pp. 104–107 Lesson 2: <i>Writing and Solving Proportions</i> pp. 108–110 Lesson 3: <i>Scale Drawings and Models</i> pp. 111–113
E. Simplify and expand algebraic expressions using exponential forms.	Unit 1 – Lesson 2: <i>Understanding Exponents</i> pp. 20–21 Lesson 3: <i>Powers of 10</i> pp. 22–23	Unit 1 – Lesson 2: <i>Exponents</i> pp. 22–24	Unit 1 – Lesson 7: <i>Exponents</i> pp. 37–39 Unit 2 – Lesson 6: <i>Rules of Exponents</i> pp. 62–64 Lesson 7: <i>Negative and Zero Exponents</i> pp. 65–67
F. Use the number line model to demonstrate integers and their applications.	Unit 1 – Lesson 4: <i>Introduction to Integers</i> pp. 24–25	Unit 3 – Lesson 1: <i>Introduction to Integers</i> pp. 74–76 Lesson 2: <i>Adding Integers</i> pp. 77–79	Unit 1 – Lesson 1: <i>Integers and Absolute Value</i> pp. 18–20 Lesson 2: <i>Adding Integers Using a Number Line</i> pp. 21–23 Lesson 3: <i>Adding Integers Using</i>

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			<i>Absolute Value</i> pp. 24–27
G. Use the inverse relationships between addition, subtraction, multiplication, division, exponentiation and root extraction to determine unknown quantities in equations.	Unit 5 – Lesson 3: <i>One-Step Algebraic Expressions</i> pp. 94–95 Lesson 4: <i>Two-Step Algebraic Expressions</i> pp. 96–97 Unit 5 – Lesson 5: <i>Solving Equations</i> pp. 98–99	Unit 4 – Lesson 6: <i>Solving One-Step Equations Using Addition and Subtraction</i> pp. 115–117 Lesson 7: <i>Solving One-Step Equations Using Multiplication and Division</i> pp. 118–120	Unit 3 – Lesson 1: <i>Commutative, Associative, and Distributive Properties</i> pp. 74–77 Unit 3 – Lesson 3: <i>Substituting Values for Variables in Formulas</i> pp. 81–83 Lesson 4: <i>Solving Equations Using Addition or Subtraction</i> pp. 84–86 Lesson 5: <i>Solving Equations Using Multiplication or Division</i> pp. 87–89
2.2 Computation and Estimation			
A. Complete calculations by applying the order of operations.	Unit 5 – Lesson 1: <i>Order of Operations</i> pp. 90–91	Unit 4 – Lesson 1: <i>Order of Operations</i> pp. 100–102	Unit 3 – Lesson 2: <i>Order of Operations</i> pp. 78–80
B. Add, subtract, multiply and divide different kinds and forms of rational numbers including integers, decimal fractions, percents and proper and improper fractions.	Unit 2 – Lesson 3: <i>Addition and Subtraction</i> pp. 40–41 Lesson 4: <i>Multiplying and Dividing by Powers of 10</i> pp. 42–43 Lesson 5: <i>Multiplication of Whole Numbers</i> pp. 44–45 Lesson 6: <i>Multiplying by Decimals</i> pp. 46–47 Lesson 7: <i>Division</i> pp. 48–49 Lesson 8: <i>Word Problems</i> pp. 50–51 Unit 4 – Lesson 1: <i>Addition and Subtraction of Fractions</i> pp. 72–73 Lesson 2: <i>Adding Mixed Numbers</i> pp. 74–75 Lesson 3: <i>Subtracting Mixed</i>	Unit 2 – Lesson 1: <i>Adding and Subtracting Fractions</i> pp. 46–48 Lesson 2: <i>Adding and Subtracting Mixed Numbers</i> pp. 49–51 Lesson 3: <i>Multiplying Fractions and Mixed Numbers</i> pp. 52–54 Lesson 4: <i>Dividing Fractions and Mixed Numbers</i> pp. 55–57 Lesson 5: <i>Adding and Subtracting Decimals</i> pp. 58–60 Lesson 6: <i>Multiplying Decimals</i> pp. 61–63 Lesson 7: <i>Dividing Decimals</i> pp. 64–67 Unit 3 – Lesson 2: <i>Adding Integers</i> pp.	Unit 1 – Lesson 2: <i>Adding Integers Using a Number Line</i> pp. 21–23 Lesson 3: <i>Adding Integers Using Absolute Value</i> pp. 24–27 Lesson 4: <i>Subtracting Integers</i> pp. 28–30 Lesson 5: <i>Multiplying Integers</i> pp. 31–33 Lesson 6: <i>Dividing Integers</i> pp. 34–36 Unit 2 – Lesson 4: <i>Adding and Subtracting Fractions</i> pp. 55–57 Lesson 5: <i>Multiplying and Dividing Fractions and Mixed Numbers</i> pp. 58–61 Unit 3 –

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	<p><i>Numbers</i> pp. 76–77 Lesson 4: <i>Multiplying Fractions</i> pp. 78–79 Lesson 5: <i>Multiplying Mixed Numbers</i> pp. 80–81 Lesson 6: <i>Dividing Fractions by Whole Numbers</i> pp. 82–83 Lesson 7: <i>Dividing Fractions by Fractions</i> pp. 84–85 Lesson 8: <i>Dividing Mixed Numbers</i> pp. 86–87</p>	<p>77–79 Lesson 3: <i>Subtracting Integers</i> pp. 80–82 Lesson 4: <i>Absolute Value</i> pp. 83–85 Lesson 5: <i>Multiplying Integers</i> pp. 86–88 Lesson 6: <i>Dividing Integers</i> pp. 89–91</p>	<p>Lesson 3: <i>Substituting Values for Variables in Formulas</i> pp. 81–83 Lesson 4: <i>Solving Equations Using Addition or Subtraction</i> pp. 84–86 Lesson 5: <i>Solving Equations Using Multiplication or Division</i> pp. 87–89 Lesson 6: <i>Solving Inequalities by Addition and Subtraction</i> pp. 90–93 Lesson 7: <i>Solving Inequalities Using Multiplication and Division</i> pp. 94–97</p>
C. Estimate the value of irrational numbers.			
D. Estimate amount of tips and discounts using ratios, proportions and percents.	<p>Unit 3 – Lesson 4: <i>Understanding Percents</i> pp. 60–61 Lesson 5: <i>Converting Between Percents, Fractions, and Decimals</i> pp. 62–63 Lesson 7: <i>Ratios and Proportions</i> pp. 66–67 Lesson 8: <i>Solving Proportions</i> pp. 68–69</p>	<p>Unit 5 – Lesson 1: <i>Ratios</i> pp. 128–131 Lesson 2: <i>Rates</i> pp. 132–134 Lesson 3: <i>Writing and Solving Proportions</i> pp. 135–137 Lesson 4: <i>Scale Drawings and Models</i> pp. 138–140 Lesson 5: <i>Fractions, Decimals, and Percents</i> pp. 140–143 Lesson 6: <i>Percent of a Number</i> pp. 144–146 Lesson 7: <i>Percent Problems</i> pp. 147–150 Lesson 8: <i>Percent of Change</i> pp. 151–153</p>	<p>Unit 4 – Lesson 1: <i>Ratios and Rates</i> pp. 104–107 Lesson 2: <i>Writing and Solving Proportions</i> pp. 108–110 Lesson 3: <i>Scale Drawings and Models</i> pp. 111–113 Lesson 4: <i>Fractions, Decimals, and Percents</i> pp. 114–116 Lesson 5: <i>Solving Percent Problems Using a Proportion</i> pp. 117–119 Lesson 6: <i>Using Proportions to Solve Other Percent Problems</i> pp. 120–123 Lesson 7: <i>Percent of Change</i> pp. 124–126</p>
E. Determine the appropriateness of overestimating or underestimating in computation.	<p>Unit 2 – Lesson 2: <i>Rounding Numbers</i> pp. 38–39</p>		
F. Identify the difference between	Unit 2 –		

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exact value and approximation and determine which is appropriate for a given situation.	Lesson 2: <i>Rounding Numbers</i> pp. 38–39		
2.3. Measurement and Estimation			
A. Develop formulas and procedures for determining measurements (e.g., area, volume, distance).	Unit 7 – Lesson 5: <i>Areas of Rectangles and Parallelograms</i> pp. 134–135 Lesson 6: <i>Area of Triangles</i> pp. 136–137 Lesson 7: <i>Area of Irregular Figures</i> pp. 138–139 Lesson 8: <i>Volume</i> pp. 140–141	Unit 7 – Lesson 2: <i>Area of Parallelograms and Triangles</i> pp. 187–190 Lesson 3: <i>Irregular Figures</i> pp. 191–193 Lesson 4: <i>Circumference of a Circle</i> pp. 194–196 Lesson 5: <i>Area of a Circle</i> pp. 197–199 Lesson 6: <i>Surface Area of a Prism</i> pp. 200–202 Lesson 7: <i>Surface Area of a Cylinder</i> pp. 203–205 Lesson 8: <i>Volume of a Prism</i> pp. 206–208	Unit 7 – Lesson 1: <i>Area of a Trapezoid</i> pp. 190–192 Lesson 2: <i>Circumference of a Circle</i> pp. 193–195 Lesson 3: <i>Area of a Circle</i> pp. 196–198 Lesson 4: <i>Surface Area of a Prism</i> pp. 199–201 Lesson 5: <i>Surface Area of a Cylinder</i> pp. 203–204 Lesson 6: <i>Surface Area of a Pyramid and a Cone</i> pp. 205–207 Lesson 7: <i>Volume of a Prism and a Cylinder</i> pp. 208–210 Lesson 8: <i>Volume of a Pyramid and a Cone</i> pp. 211–213
B. Solve rate problems (e.g., rate \times time = distance, principal \times interest rate = interest).	Unit 3 – Lesson 7: <i>Ratios and Proportions</i> pp. 66–67	Unit 5 – Lesson 2: <i>Rates</i> pp. 132–134	Unit 4 – Lesson 1: <i>Ratios and Rates</i> pp. 104–107
C. Measure angles in degrees and determine relations of angles.	Unit 7 – Lesson 3: <i>Angles</i> pp. 130–131 Lesson 4: <i>Angles in a Triangle</i> pp. 132–133	Unit 6 – Lesson 1: <i>Angles</i> pp. 156–159	Unit 6 – Lesson 1: <i>Angles</i> pp. 160–163 Lesson 2: <i>Angles in Parallel Lines Cut by a Transversal</i> pp. 164–166
D. Estimate, use and describe measures of distance, rate, perimeter, area, volume, weight, mass and angles.	Unit 7 – Lesson 5: <i>Areas of Rectangles and Parallelograms</i> pp. 134–135 Lesson 6: <i>Area of Triangles</i> pp. 136–137 Lesson 7: <i>Area of Irregular Figures</i>	Unit 5 – Lesson 2: <i>Rates</i> pp. 132–134 Unit 7 – Lesson 4: <i>Circumference of a Circle</i> pp. 194–196 Lesson 5: <i>Area of a Circle</i> pp.	Unit 6 – Lesson 1: <i>Angles</i> pp. 160–163 Lesson 2: <i>Angles in Parallel Lines Cut by a Transversal</i> pp. 164–166 Unit 7 – Lesson 1: <i>Area of a Trapezoid</i> pp.

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	pp. 138–139 Lesson 8: <i>Volume</i> pp. 140–141	197–199 Lesson 6: <i>Surface Area of a Prism</i> pp. 200–202 Lesson 7: <i>Surface Area of a Cylinder</i> pp. 203–205 Lesson 8: <i>Volume of a Prism</i> pp. 206–208	190–192 Lesson 2: <i>Circumference of a Circle</i> pp. 193–195 Lesson 3: <i>Area of a Circle</i> pp. 196–198 Lesson 4: <i>Surface Area of a Prism</i> pp. 199–201 Lesson 5: <i>Surface Area of a Cylinder</i> pp. 202–204 Lesson 6: <i>Surface Area of a Pyramid and a Cone</i> pp. 205–207 Lesson 7: <i>Volume of a Prism and a Cylinder</i> pp. 208–210 Lesson 8: <i>Volume of a Pyramid and a Cone</i> pp. 211–213
E. Describe how a change in linear dimension of an object affects its perimeter, area and volume.	Unit 3 – Lesson 7: <i>Ratios and Proportions</i> pp. 66–67	Unit 5 – Lesson 1: <i>Ratios</i> pp. 128–131	Unit 4 – Lesson 1: <i>Ratios and Rates</i> pp. 104–107
F. Use scale measurements to interpret maps or drawings.	Unit 8 – Lesson 3: <i>Scales and Bar Graphs</i> pp. 148–149	Unit 5 – Lesson 4: <i>Scale Drawings and Models</i> pp. 138–140	Unit 4 – Lesson 3: <i>Scale Drawings and Models</i> pp. 111–113
G. Create and use scale models.	Unit 8 – Lesson 3: <i>Scales and Bar Graphs</i> pp. 148–149	Unit 5 – Lesson 4: <i>Scale Drawings and Models</i> pp. 138–140	Unit 4 – Lesson 3: <i>Scale Drawings and Models</i> pp. 111–113
2.4. Mathematical Reasoning and Connections			
A. Make conjectures based on logical reasoning and test conjectures by using counter-examples.	Unit 6 – Lesson 1: <i>Properties of Polygons</i> pp. 108–109 Lesson 2: <i>Classifying Quadrilaterals</i> pp. 110–111	Unit 6 – Lesson 3: <i>Polygons</i> pp. 163–165 Lesson 4: <i>Congruent Polygons</i> pp. 166–168 Lesson 5: <i>Similar Polygons</i> pp. 169–171	Unit 6 – Lesson 3: <i>Polygons</i> pp. 167–170 Lesson 4: <i>Sum of Angles in Polygons</i> pp. 171–173 Lesson 5: <i>Congruent Triangles</i> pp. 174–176 Lesson 6: <i>Similarity and Dilations</i> pp. 177–179

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B. Combine numeric relationships to arrive at a conclusion.	Unit 5 – Lesson 3: <i>One-Step Algebraic Expressions</i> pp. 94–95 Lesson 4: <i>Two-Step Algebraic Expressions</i> pp. 96–97 Lesson 5: <i>Solving Equations</i> pp. 98–99	Unit 4 – Lesson 6: <i>Solving One-Step Equations Using Addition and Subtraction</i> pp. 115–117 Lesson 7: <i>Solving One-Step Equations Using Multiplication and Division</i> pp. 118–120	Unit 3 – Lesson 3: <i>Substituting Values for Variables in Formulas</i> pp. 81–83 Lesson 4: <i>Solving Equations Using Addition or Subtraction</i> pp. 84–86 Lesson 5: <i>Solving Equations Using Multiplication or Division</i> pp. 87–89 Lesson 6: <i>Solving Inequalities by Addition and Subtraction</i> pp. 90–93 Lesson 7: <i>Solving Inequalities Using Multiplication and Division</i> pp. 94–97
C. Use if...then statements to construct simple, valid arguments.			
D. Construct, use and explain algorithmic procedures for computing and estimating with whole numbers, fractions, decimals and integers.	Unit 2 – Lesson 3: <i>Addition and Subtraction</i> pp. 40–41 Lesson 4: <i>Multiplying and Dividing by Powers of 10</i> pp. 42–43 Lesson 5: <i>Multiplication of Whole Numbers</i> pp. 44–45 Lesson 6: <i>Multiplying by Decimals</i> pp. 46–47 Lesson 7: <i>Division</i> pp. 48–49 Lesson 8: <i>Word Problems</i> pp. 50–51 Unit 4 – Lesson 1: <i>Addition and Subtraction of Fractions</i> pp. 72–73 Lesson 2: <i>Adding Mixed Numbers</i> pp. 74–75 Lesson 3: <i>Subtracting Mixed Numbers</i> pp. 76–77 Lesson 4: <i>Multiplying Fractions</i> pp.	Unit 2 – Lesson 1: <i>Adding and Subtracting Fractions</i> pp. 46–48 Lesson 2: <i>Adding and Subtracting Mixed Numbers</i> pp. 49–51 Lesson 3: <i>Multiplying Fractions and Mixed Numbers</i> pp. 52–54 Lesson 4: <i>Dividing Fractions and Mixed Numbers</i> pp. 55–57 Lesson 5: <i>Adding and Subtracting Decimals</i> pp. 58–60 Lesson 6: <i>Multiplying Decimals</i> pp. 61–63 Lesson 7: <i>Dividing Decimals</i> pp. 64–67 Unit 3 – Lesson 2: <i>Adding Integers</i> pp. 77–79 Lesson 3: <i>Subtracting Integers</i>	Unit 1 – Lesson 2: <i>Adding Integers Using a Number Line</i> pp. 21–23 Lesson 3: <i>Adding Integers Using Absolute Value</i> pp. 24–27 Lesson 4: <i>Subtracting Integers</i> pp. 28–30 Lesson 5: <i>Multiplying Integers</i> pp. 31–33 Lesson 6: <i>Dividing Integers</i> pp. 34–36 Unit 2 – Lesson 4: <i>Adding and Subtracting Fractions</i> pp. 55–57 Lesson 5: <i>Multiplying and Dividing Fractions and Mixed Numbers</i> pp. 58–61 Unit 3 – Lesson 3: <i>Substituting Values for Variables in Formulas</i> pp. 81–83

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	78–79 Lesson 5: <i>Multiplying Mixed Numbers</i> pp. 80–81 Lesson 6: <i>Dividing Fractions by Whole Numbers</i> pp. 82–83 Lesson 7: <i>Dividing Fractions by Fractions</i> pp. 84–85 Lesson 8: <i>Dividing Mixed Numbers</i> pp. 86–87	pp. 80–82 Lesson 4: <i>Absolute Value</i> pp. 83–85 Lesson 5: <i>Multiplying Integers</i> pp. 86–88 Lesson 6: <i>Dividing Integers</i> pp. 89–91	Lesson 4: <i>Solving Equations Using Addition or Subtraction</i> pp. 84–86 Lesson 5: <i>Solving Equations Using Multiplication or Division</i> pp. 87–89 Lesson 6: <i>Solving Inequalities by Addition and Subtraction</i> pp. 90–93 Lesson 7: <i>Solving Inequalities Using Multiplication and Division</i> pp. 94–97
E. Distinguish between inductive and deductive reasoning.			
F. Use measurements and statistics to quantify issues (e.g., in family, consumer science situations).	Unit 8 – Lesson 4: <i>Conducting Surveys</i> pp. 150–151	Unit 8 – Lesson 1: <i>Possible Outcomes</i> pp. 212–214	Unit 8 – Lesson 1: <i>Counting Methods</i> pp. 216–219 Lesson 8: <i>Appropriate Graphs</i> pp. 241–243
2.5. Mathematical Problem Solving and Communication			
A. Invent, select, use and justify the appropriate methods, materials and strategies to solve problems.	Unit 2 – Lesson 8: <i>Word Problems</i> pp. 50–51	Unit 4 – Lesson 1: <i>Order of Operations</i> pp. 100–102	Unit 3 – Lesson 2: <i>Order of Operations</i> pp. 78–80
B. Verify and interpret results using precise mathematical language, notation and representations, including numerical tables and equations, simple algebraic equations and formulas, charts, graphs and diagrams.	Unit 7 – Lesson 5: <i>Areas of Rectangles and Parallelograms</i> pp. 134–135 Lesson 6: <i>Area of Triangles</i> pp. 136–137	Unit 7 – Lesson 5: <i>Area of a Circle</i> pp. 197–199 Lesson 6: <i>Surface Area of a Prism</i> pp. 200–202	Unit 7 – Lesson 1: <i>Area of a Trapezoid</i> pp. 190–192 Lesson 2: <i>Circumference of a Circle</i> pp. 193–195 Lesson 3: <i>Area of a Circle</i> pp. 196–198
C. Justify strategies and defend approaches used and conclusions reached.	Unit 6 – Lesson 1: <i>Properties of Polygons</i> pp. 108–109 Lesson 2: <i>Classifying Quadrilaterals</i> pp. 110–111	Unit 6 – Lesson 3: <i>Polygons</i> pp. 163–165 Lesson 4: <i>Congruent Polygons</i> pp. 166–168 Lesson 5: <i>Similar Polygons</i> pp.	Unit 6 – Lesson 3: <i>Polygons</i> pp. 167–170 Lesson 4: <i>Sum of Angles in Polygons</i> pp. 171–173 Lesson 5: <i>Congruent Triangles</i> pp. 174–176

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		169–171	Lesson 6: <i>Similarity and Dilations</i> pp. 177–179
D. Determine pertinent information in problem situations and whether any further information is needed for solutions.	Unit 8 – Lesson 4: <i>Conducting Surveys</i> pp. 150–151	Unit 8 – Lesson 1: <i>Possible Outcomes</i> pp. 212–214	Unit 8 – Lesson 1: <i>Counting Methods</i> pp. 216–219
2.6. Statistics and Data Analysis			
A. Compare and contrast different plots of data using values of mean, median, mode, quartiles and range.	Unit 8 – Lesson 1: <i>Mean, Mode, and Median</i> pp. 144–145	Unit 8 – Lesson 6: <i>Mean, Median, and Mode</i> pp. 229–232	Unit 8 – Lesson 3: <i>Mean, Median, and Mode</i> pp. 224–226
B. Explain effects of sampling procedures and missing or incorrect information on reliability.	Unit 8 – Lesson 4: <i>Conducting Surveys</i> pp. 150–151		
C. Fit a line to the scatter plot of two quantities and describe any correlation of the variables.			Unit 8 – Lesson 4: <i>Scatter Plots</i> pp. 227–229
D. Design and carry out a random sampling procedure.	Unit 8 – Lesson 4: <i>Conducting Surveys</i> pp. 150–151		
E. Analyze and display data in stem-and-leaf and box-and-whisker plots.	Unit 8 – Lesson 2: <i>Line Plots and Stem-and-Leaf Plots</i> pp. 146–147		
F. Use scientific and graphing calculators and computer spreadsheets to organize and analyze data.	Unit 8 – Lesson 1: <i>Mean, Mode, and Median</i> pp. 144–145	Unit 8 – Lesson 2: <i>Permutations</i> pp. 215–217 Lesson 3: <i>Combinations</i> pp. 218–220	Unit 8 – Lesson 3: <i>Mean, Median, and Mode</i> pp. 224–226 Lesson 7: <i>Circle Graphs</i> pp. 238–240
G. Determine the validity of the sampling method described in studies published in local or national newspapers.	Unit 8 – Lesson 4: <i>Conducting Surveys</i> pp. 150–151		Unit 8 – Lesson 1: <i>Counting Methods</i> pp. 216–219
2.7. Probability and Predictions			

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A. Determine the number of combinations and permutations for an event.		Unit 8 – Lesson 1: <i>Possible Outcomes</i> pp. 212–214 Lesson 2: <i>Permutations</i> pp. 215–217 Lesson 3: <i>Combinations</i> pp. 218–220	Unit 8 – Lesson 1: <i>Counting Methods</i> pp. 216–219
B. Present the results of an experiment using visual representations (e.g., tables, charts, graphs).	Unit 8 – Lesson 7: <i>Probability</i> pp. 156–157 Lesson 8: <i>Probability Experiments</i> pp. 158–159	Unit 8 – Lesson 1: <i>Possible Outcomes</i> pp. 212–214 Lesson 2: <i>Permutations</i> pp. 215–217 Lesson 3: <i>Combinations</i> pp. 218–220 Lesson 4: <i>Disjoint, Overlapping, and Complementary Events</i> pp. 221–224 Lesson 5: <i>Dependent and Independent Events</i> pp. 225–228	Unit 8 – Lesson 4: <i>Scatter Plots</i> pp. 227–229 Lesson 5: <i>Box-and-Whiskers Plots</i> pp. 230–233 Lesson 6: <i>Line Graphs</i> pp. 234–237 Lesson 7: <i>Circle Graphs</i> pp. 238–240 Lesson 8: <i>Appropriate Graphs</i> pp. 241–243
C. Analyze predictions (e.g., election polls).		Unit 8 – Lesson 1: <i>Possible Outcomes</i> pp. 212–214	
D. Compare and contrast results from observations and mathematical models.	Unit 8 – Lesson 7: <i>Probability</i> pp. 156–157 Lesson 8: <i>Probability Experiments</i> pp. 158–159	Unit 8 – Lesson 1: <i>Possible Outcomes</i> pp. 212–214 Lesson 2: <i>Permutations</i> pp. 215–217 Lesson 3: <i>Combinations</i> pp. 218–220 Lesson 4: <i>Disjoint, Overlapping, and Complementary Events</i> pp. 221–224 Lesson 5: <i>Dependent and</i>	Unit 8 – Lesson 4: <i>Scatter Plots</i> pp. 227–229 Lesson 5: <i>Box-and-Whiskers Plots</i> pp. 230–233 Lesson 6: <i>Line Graphs</i> pp. 234–237 Lesson 7: <i>Circle Graphs</i> pp. 238–240 Lesson 8: <i>Appropriate Graphs</i> pp. 241–243

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		<i>Independent Events</i> pp. 225–228	
E. Make valid inferences, predictions and arguments based on probability.	Unit 8 – Lesson 7: <i>Probability</i> pp. 156–157 Lesson 8: <i>Probability Experiments</i> pp. 158–159	Unit 8 – Lesson 1: <i>Possible Outcomes</i> pp. 212–214 Lesson 2: <i>Permutations</i> pp. 215–217 Lesson 3: <i>Combinations</i> pp. 218–220 Lesson 4: <i>Disjoint, Overlapping, and Complementary Events</i> pp. 221–224 Lesson 5: <i>Dependent and Independent Events</i> pp. 225–228	Unit 8 – Lesson 1: <i>Counting Methods</i> pp. 216–219 Lesson 2: <i>Making Predictions</i> pp. 220–223
2.8. Algebra and Functions			
A. Apply simple algebraic patterns to basic number theory and to spatial relations	Unit 5 – Lesson 2: <i>Patterns</i> pp. 92–93	Unit 5 – Lesson 3: <i>Writing and Solving Proportions</i> pp. 135–137 Lesson 4: <i>Scale Drawings and Models</i> pp. 138–140	Unit 5 – Lesson 4: <i>Relations and Functions</i> pp. 141–143
B. Discover, describe and generalize patterns, including linear, exponential and simple quadratic relationships.	Unit 5 – Lesson 2: <i>Patterns</i> pp. 92–93	Unit 5 – Lesson 3: <i>Writing and Solving Proportions</i> pp. 135–137 Lesson 4: <i>Scale Drawings and Models</i> pp. 138–140	
C. Create and interpret expressions, equations or inequalities that model problem situations.	Unit 5 – Lesson 3: <i>One-Step Algebraic Expressions</i> pp. 94–95 Lesson 4: <i>Two-Step Algebraic Expressions</i> pp. 96–97 Lesson 5: <i>Solving Equations</i> pp. 98–99	Unit 4 – Lesson 2: <i>Evaluating Algebraic Expressions</i> pp. 103–105 Lesson 3: <i>Writing and Evaluating Expressions</i> pp. 106–108 Lesson 4: <i>Graphing Functions</i> pp. 109–111	Unit 5 – Lesson 1: <i>Solving Two-Step Equations</i> pp. 132–134 Lesson 2: <i>Solving Multi-Step Equations</i> pp. 135–137 Lesson 3: <i>Translating and Solving Word Problems</i> pp. 138–140 Lesson 4: <i>Relations and Functions</i>

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		Lesson 5: <i>Simplifying Expressions</i> pp. 112–114 Lesson 6: <i>Solving One-Step Equations Using Addition and Subtraction</i> pp. 115–117 Lesson 7: <i>Solving One-Step Equations Using Multiplication and Division</i> pp. 118–120 Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121–124	pp. 141–143 Lesson 5: <i>Two-Variable Equations</i> pp. 144–146 Lesson 6: <i>Graphing Linear Functions</i> pp. 147–150 Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153 Lesson 8: <i>Slope</i> pp. 154–157
D. Use concrete objects to model algebraic concepts.	Unit 5 – Lesson 1: <i>Order of Operations</i> pp. 90–91 Lesson 2: <i>Patterns</i> pp. 92–93 Lesson 3: <i>One-Step Algebraic Expressions</i> pp. 94–95 Lesson 4: <i>Two-Step Algebraic Expressions</i> pp. 96–97 Lesson 5: <i>Solving Equations</i> pp. 98–99 Lesson 6: <i>Word Problems</i> pp. 100–101 Lesson 7: <i>Graphing Algebraic Equations</i> pp. 102–103 Lesson 8: <i>Inequalities</i> pp. 104–105	Unit 4 – Lesson 2: <i>Evaluating Algebraic Expressions</i> pp. 103–105 Lesson 3: <i>Writing and Evaluating Expressions</i> pp. 106–108 Lesson 4: <i>Graphing Functions</i> pp. 109–111 Lesson 5: <i>Simplifying Expressions</i> pp. 112–114 Lesson 6: <i>Solving One-Step Equations Using Addition and Subtraction</i> pp. 115–117 Lesson 7: <i>Solving One-Step Equations Using Multiplication and Division</i> pp. 118–120 Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121–124	Unit 3 – Lesson 1: <i>Commutative, Associative, and Distributive Properties</i> pp. 74–77 Lesson 2: <i>Order of Operations</i> pp. 78–80 Lesson 3: <i>Substituting Values for Variables in Formulas</i> pp. 81–83 Lesson 4: <i>Solving Equations Using Addition or Subtraction</i> pp. 84–86 Lesson 5: <i>Solving Equations Using Multiplication or Division</i> pp. 87–89 Lesson 6: <i>Solving Inequalities by Addition and Subtraction</i> pp. 90–93 Lesson 7: <i>Solving Inequalities Using Multiplication and Division</i> pp. 94–97 Lesson 8: <i>Pythagorean Theorem</i> pp. 98–101 Unit 4 – Lesson 1: <i>Ratios and Rates</i> pp. 104–107 Lesson 2: <i>Writing and Solving</i>

Grade 8 State Academic Standards	Math Elevations Level F Teacher's Guide Examples/Lessons	Math Elevations Level G Teacher's Guide Examples/Lessons	Math Elevations Level H Teacher's Guide Examples/Lessons
			<p><i>Proportions</i> pp. 108–110 Lesson 3: <i>Scale Drawings and Models</i> pp. 111–113 Lesson 4: <i>Fractions, Decimals, and Percents</i> pp. 114–116 Lesson 5: <i>Solving Percent Problems Using a Proportion</i> pp. 117–119 Lesson 6: <i>Using Proportions to Solve Other Percent Problems</i> pp. 120–123 Lesson 7: <i>Percent of Change</i> pp. 124–126 Lesson 8: <i>Percent Applications</i> pp. 127–129 Unit 5 – Lesson 1: <i>Solving Two-Step Equations</i> pp. 132–134 Lesson 2: <i>Solving Multi-Step Equations</i> pp. 135–137 Lesson 3: <i>Translating and Solving Word Problems</i> pp. 138–140 Lesson 4: <i>Relations and Functions</i> pp. 141–143 Lesson 5: <i>Two-Variable Equations</i> pp. 144–146 Lesson 6: <i>Graphing Linear Functions</i> pp. 147–150 Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153 Lesson 8: <i>Slope</i> pp. 154–157</p>
E. Select and use a strategy to solve an equation or inequality, explain the solution and check the	Unit 5 – Lesson 3: <i>One-Step Algebraic Expressions</i> pp. 94–95	Unit 4 – Lesson 6: <i>Solving One-Step Equations Using Addition and</i>	Unit 3 – Lesson 4: <i>Solving Equations Using Addition or Subtraction</i> pp. 84–86

Grade 8 State Academic Standards	Math Elevations Level F Teacher's Guide Examples/Lessons	Math Elevations Level G Teacher's Guide Examples/Lessons	Math Elevations Level H Teacher's Guide Examples/Lessons
solution for accuracy.	Lesson 4: <i>Two-Step Algebraic Expressions</i> pp. 96–97 Lesson 5: <i>Solving Equations</i> pp. 98–99 Lesson 6: <i>Word Problems</i> pp. 100–101 Lesson 7: <i>Graphing Algebraic Equations</i> pp. 102–103 Lesson 8: <i>Inequalities</i> pp. 104–105	<i>Subtraction</i> pp. 115–117 Lesson 7: <i>Solving One-Step Equations Using Multiplication and Division</i> pp. 118–120 Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121–124	Lesson 5: <i>Solving Equations Using Multiplication or Division</i> pp. 87–89 Lesson 6: <i>Solving Inequalities by Addition and Subtraction</i> pp. 90–93 Lesson 7: <i>Solving Inequalities Using Multiplication and Division</i> pp. 94–97 Unit 5 – Lesson 1: <i>Solving Two-Step Equations</i> pp. 132–134 Lesson 2: <i>Solving Multi-Step Equations</i> pp. 135–137 Lesson 3: <i>Translating and Solving Word Problems</i> pp. 138–140 Lesson 4: <i>Relations and Functions</i> pp. 141–143 Lesson 5: <i>Two-Variable Equations</i> pp. 144–146 Lesson 6: <i>Graphing Linear Functions</i> pp. 147–150 Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153 Lesson 8: <i>Slope</i> pp. 154–157
F. Solve and graph equations and inequalities using scientific and graphing calculators and computer spreadsheets.	Unit 5 – Lesson 3: <i>One-Step Algebraic Expressions</i> pp. 94–95 Lesson 4: <i>Two-Step Algebraic Expressions</i> pp. 96–97 Lesson 5: <i>Solving Equations</i> pp. 98–99 Lesson 6: <i>Word Problems</i> pp. 100–101 Lesson 7: <i>Graphing Algebraic Equations</i> pp. 102–103	Unit 4 – Lesson 6: <i>Solving One-Step Equations Using Addition and Subtraction</i> pp. 115–117 Lesson 7: <i>Solving One-Step Equations Using Multiplication and Division</i> pp. 118–120 Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121–124	Unit 3 – Lesson 4: <i>Solving Equations Using Addition or Subtraction</i> pp. 84–86 Lesson 5: <i>Solving Equations Using Multiplication or Division</i> pp. 87–89 Lesson 6: <i>Solving Inequalities by Addition and Subtraction</i> pp. 90–93 Lesson 7: <i>Solving Inequalities Using Multiplication and Division</i> pp. 94–97 Unit 5 –

Grade 8 State Academic Standards	Math Elevations Level F Teacher's Guide Examples/Lessons	Math Elevations Level G Teacher's Guide Examples/Lessons	Math Elevations Level H Teacher's Guide Examples/Lessons
	Lesson 8: <i>Inequalities</i> pp. 104–105		Lesson 1: <i>Solving Two-Step Equations</i> pp. 132–134
G. Represent relationships with tables or graphs in the coordinate plane and verbal or symbolic rules.	Unit 6 – Lesson 5: <i>The Coordinate Plane</i> pp. 116–117	Unit 4 – Lesson 4: <i>Graphing Functions</i> pp. 109–111	Unit 6 – Lesson 7: <i>Reflections and Translations in the Coordinate Plane</i> pp. 180–183 Lesson 8: <i>Rotations in the Coordinate Plane</i> pp. 184–186
H. Graph a linear function from a rule or table.	Unit 5 – Lesson 7: <i>Graphing Algebraic Equations</i> pp. 102–103	Unit 4 – Lesson 4: <i>Graphing Functions</i> pp. 109–111	Unit 5 – Lesson 6: <i>Graphing Linear Functions</i> pp. 147–150 Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153
I. Generate a table or graph from a function and use graphing calculators and computer spreadsheets to graph and analyze functions.	Unit 5 – Lesson 7: <i>Graphing Algebraic Equations</i> pp. 102–103	Unit 4 – Lesson 4: <i>Graphing Functions</i> pp. 109–111	Unit 5 – Lesson 6: <i>Graphing Linear Functions</i> pp. 147–150 Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153
J. Show that an equality relationship between two quantities remains the same as long as the same change is made to both quantities; explain how a change in one quantity determines another quantity in a functional relationship.	Unit 5 – Lesson 7: <i>Graphing Algebraic Equations</i> pp. 102–103	Unit 5 – Lesson 1: <i>Ratios</i> pp. 128–131 Lesson 2: <i>Rates</i> pp. 132–134	Unit 4 – Lesson 5: <i>Solving Percent Problems Using a Proportion</i> pp. 117–119 Lesson 6: <i>Using Proportions to Solve Other Percent Problems</i> pp. 120–123
2.9. Geometry			
A. Construct figures incorporating perpendicular and parallel lines, the perpendicular bisector of a line segment and an angle bisector using computer software.			Unit 6 – Lesson 2: <i>Angles in Parallel Lines Cut by a Transversal</i> pp. 164–166
B. Draw, label, measure and list the properties of complementary,	Unit 7 – Lesson 4: <i>Angles in a Triangle</i> pp.	Unit 6 – Lesson 1: <i>Angles</i> pp. 156–159	Unit 6 – Lesson 1: <i>Angles</i> pp. 160–163

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supplementary and vertical angles.	132–133		Lesson 2: <i>Angles in Parallel Lines Cut by a Transversal</i> pp. 164–166
C. Classify familiar polygons as regular or irregular up to a decagon.	Unit 6 – Lesson 1: <i>Properties of Polygons</i> pp. 108–109	Unit 6 – Lesson 4: <i>Congruent Polygons</i> pp. 166–168 Lesson 5: <i>Similar Polygons</i> pp. 169–171	Unit 6 – Lesson 3: <i>Polygons</i> pp. 167–170 Lesson 4: <i>Sum of Angles in Polygons</i> pp. 171–173
D. Identify, name, draw and list all properties of squares, cubes, pyramids, parallelograms, quadrilaterals, trapezoids, polygons, rectangles, rhombi, circles, spheres, triangles, prisms and cylinders.	Unit 6 – Lesson 1: <i>Properties of Polygons</i> pp. 108–109 Lesson 2: <i>Classifying Quadrilaterals</i> pp. 110–111 Lesson 3: <i>Solid Figures</i> pp. 112–113 Lesson 4: <i>Circles</i> pp. 114–115	Unit 6 – Lesson 4: <i>Congruent Polygons</i> pp. 166–168 Lesson 5: <i>Similar Polygons</i> pp. 169–171	Unit 6 – Lesson 3: <i>Polygons</i> pp. 167–170 Lesson 4: <i>Sum of Angles in Polygons</i> pp. 171–173
E. Construct parallel lines, draw a transversal and measure and compare angles formed (e.g., alternate interior and exterior angles).			Unit 6 – Lesson 2: <i>Angles in Parallel Lines Cut by a Transversal</i> pp. 164–166
F. Distinguish between similar and congruent polygons.	Unit 6 – Lesson 1: <i>Properties of Polygons</i> pp. 108–109	Unit 6 – Lesson 4: <i>Congruent Polygons</i> pp. 166–168	Unit 6 – Lesson 3: <i>Polygons</i> pp. 167–170 Lesson 4: <i>Sum of Angles in Polygons</i> pp. 171–173
G. Approximate the value of π (pi) through experimentation.	Unit 6 – Lesson 4: <i>Circles</i> pp. 114–115	Unit 7 – Lesson 4: <i>Circumference of a Circle</i> pp. 194–196 Lesson 5: <i>Area of a Circle</i> pp. 197–199 Lesson 6: <i>Surface Area of a Prism</i> pp. 200–202 Lesson 7: <i>Surface Area of a Cylinder</i> pp. 203–205 Lesson 8: <i>Volume of a Prism</i>	Unit 7 – Lesson 2: <i>Circumference of a Circle</i> pp. 193–195 Lesson 3: <i>Area of a Circle</i> pp. 196–198 Lesson 5: <i>Surface Area of a Cylinder</i> pp. 202–204 Lesson 6: <i>Surface Area of a Pyramid and a Cone</i> pp. 205–207 Lesson 7: <i>Volume of a Prism and a</i>

Grade 8 State Academic Standards	Math Elevations Level F Teacher's Guide Examples/Lessons	Math Elevations Level G Teacher's Guide Examples/Lessons	Math Elevations Level H Teacher's Guide Examples/Lessons
		pp. 206–208	<i>Cylinder</i> pp. 208–210 Lesson 8: <i>Volume of a Pyramid and a Cone</i> pp. 211–213
H. Use simple geometric figures (e.g., triangles, squares) to create, through rotation, transformational figures in three dimensions.	Unit 6 – Lesson 6: <i>Translation</i> pp. 118–119 Lesson 7: <i>Reflection</i> pp. 120–121 Lesson 8: <i>Rotation</i> pp. 122–123	Unit 6 – Lesson 6: <i>Translations in the Coordinate Plane</i> pp. 172–174 Lesson 7: <i>Reflections and Rotations in the Coordinate Plane</i> pp. 175–178	Unit 6 – Lesson 7: <i>Reflections and Translations in the Coordinate Plane</i> pp. 180–183 Lesson 8: <i>Rotations in the Coordinate Plane</i> pp. 184–186
I. Generate transformations using computer software.			Unit 6 – Lesson 7: <i>Reflections and Translations in the Coordinate Plane</i> pp. 180–183 Lesson 8: <i>Rotations in the Coordinate Plane</i> pp. 184–186
J. Analyze geometric patterns (e.g., tessellations, sequences of shapes) and develop descriptions of the patterns.			
K. Analyze objects to determine whether they illustrate tessellations, symmetry, congruence, similarity and scale.		Unit 6 – Lesson 4: <i>Congruent Polygons</i> pp. 166–168	Unit 6 – Lesson 3: <i>Polygons</i> pp. 167–170 Lesson 4: <i>Sum of Angles in Polygons</i> pp. 171–173
2.10. Trigonometry			
A. Compute measures of sides and angles using proportions, the Pythagorean Theorem and right triangle relationships.	Unit 3 – Lesson 7: <i>Ratios and Proportions</i> pp. 66–67 Lesson 8: <i>Solving Proportions</i> pp. 68–69 Unit 7 – Lesson 3: <i>Angles</i> pp. 130–131	Unit 5 – Lesson 1: <i>Ratios</i> pp. 128–131	Unit 6 – Lesson 1: <i>Angles</i> pp. 160–163 Lesson 2: <i>Angles in Parallel Lines Cut by a Transversal</i> pp. 164–166
B. Solve problems requiring indirect measurement for lengths of sides of triangles.			

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2.11. Concepts of Calculus			
A. Analyze graphs of related quantities for minimum and maximum values and justify the findings.	Unit 5 – Lesson 7: <i>Graphing Algebraic Equations</i> pp. 102–103	Unit 4 – Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121–124	Unit 5 – Lesson 6: <i>Graphing Linear Functions</i> pp. 147–150
B. Describe the concept of unit rate, ratio and slope in the context of rate of change.		Unit 5 – Lesson 1: <i>Ratios</i> pp. 128–131 Lesson 2: <i>Rates</i> pp. 132–134 Lesson 4: <i>Scale Drawings and Models</i> pp. 138–140	Unit 4 – Lesson 1: <i>Ratios and Rates</i> pp. 104–107 Unit 5 – Lesson 8: <i>Slope</i> pp. 154–157
C. Continue a pattern of numbers or objects that could be extended infinitely.	Unit 5 – Lesson 2: <i>Patterns</i> pp. 92–93		