

SCHOOL DISTRICT U-46

COMPANION TO PRE ALGEBRA 2 (8<sup>TH</sup> GRADE) PACING GUIDE

Course Title: **Pre Algebra 2 (8<sup>th</sup> Grade)**

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Overview of Chapters

Chapter 1      **The Tools of Algebra**

Chapter 2      **Integers**

Chapter 3      **Equations**

**Unit 1**  
**Algebra and Integers**

Chapter 4      **Factors and Fractions**

Chapter 5      **Rational Numbers**

Chapter 6      **Ratio, Proportion, and Percent**

**Unit 2**  
**Algebra and Rational Numbers**

Chapter 7      **Equations and Inequalities**

Chapter 8      **Functions and Graphing**

**Unit 3**  
**Linear Equations, Inequalities, and Functions**

Chapter 9      **Real Numbers and Right Triangles**

Chapter 10     **Two-Dimensional Shapes**

Chapter 11     **Three-Dimensional Shapes**

**Unit 4**  
**Applying Algebra to Geometry**

Chapter 12     **More Statistics and Probability**

Chapter 13     **Polynomials and Nonlinear Functions**

**Unit 5**  
**Extending Algebra to Statistics and Polynomials**

Chapter 1 **The Tools of Algebra**

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal.Grade.Objective/Comments</i>
1-1 <b>Skip</b>	Using a Problem Solving Plan (4 step plan)	6.08.13 <b>Proficient</b> Used throughout the entire year.
1-2 <b>Combine w/1-3</b>	Numbers and Expressions	6.08.10 <b>Basic</b> missing exponents, decimals, integers, fractions & roots. <b>Create worksheet</b> for order of operations including exponents, decimals, integers, fractions & roots. <b>Refer</b> to Ch. 4-2 for vocabulary.  6.08.02 <b>Proficient</b> include on same worksheet.  8.08.02 <b>Proficient</b>  8.08.05 <b>Basic</b>
1-3 <b>Combine w/1-2</b>	Variables and Expressions	
1-4 <b>Teach</b>	Properties	8.08.04 <b>Basic</b>
1-5 <b>Skip</b>	Variables and Equations	Covered in Chapter 3
1-6 <b>Skip</b>	Ordered Pairs and Relations	Covered in Chapter 2.6
1-7 <b>Teach</b>	Scatter Plots	10.08.01 <b>Basic</b> Use Chapter 8-8 and/or supplement materials for reference. 10.08.04 <b>Basic</b> *Focus on concept of "Line of best fit" DO NOT derive the equation.

Chapter 2 **Integers**

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal.Grade.Objective/Comments</i>
2-1 <b>Teach</b>	Integers and Absolute Value	6.08.06 <b>Basic</b> 6.08.07 <b>Basic</b> 9.08.12 <b>Proficient</b>  Missing rational numbers
2-2 <b>Combine w/2-3</b>	Adding Integers	6.8.09 <b>Basic</b>  Missing rational numbers
2-3 <b>Combine w/2-2</b>	Subtracting Integers	
2-4 <b>Combine w/2-5</b>	Multiplying Integers	6.8.09 <b>Basic</b>  Missing rational numbers
2-5 <b>Combine w/2-4</b>	Dividing Integers	
2-6 <b>Teach</b>	The Coordinate System	9.08.05 <b>Proficient</b>  Connection to map skills in other content areas. (i.e., reading social studies)

Chapter 3 **Equations**

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal.Grade.Objective/Comments</i>
3-1 <b>Teach</b> w/1-4	Distributive Property	<b>*Big Idea</b> 6.08.11 <b>Proficient</b> covering Distributive Property only. 8.08.04 <b>Basic</b>
3-2 <b>Teach</b>	Simplifying Algebraic Expressions	8.08.03 <b>Proficient</b>
<b>Postpone</b>	Algebra Activity	*Depending on Algebra Tiles being available*
3-3 <b>Skip</b>	Solving Equations by Adding or Subtracting	
3-4 <b>Skip</b>	Solving Equations by Multiplying or Dividing.	
3-5 <b>Teach</b>	Solving Two-Step Equations	8.08.11 <b>Proficient</b> 8.08.12 <b>Proficient</b>
3-6 <b>Teach</b>	Writing Two-Step Equations	8.08.11 <b>Proficient</b> 8.08.12 <b>Proficient</b>
3-7 <b>Skip</b>	Using Formulas	

Chapter 4 **Factors and Fractions**

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal.Grade.Objective/Comments</i>
4-1 <b>Skip</b>	Factors and Monomials	Covered in previous grades.
4-2 <b>Skip</b>	Powers and Exponents	Covered in Chapter 1-2. 6.08.05 <b>Proficient</b> 6.08.09 <b>Proficient</b> 8.08.05 <b>Proficient</b>
4-3 <b>Combine w/4-4</b>	Prime Factorization	6.08.08 <b>Proficient</b>
4-4 <b>Combine w/4-3</b>	Greatest Common Factor (GCF)	
4-5 <b>Combine w/4-6</b>	Simplifying Algebraic Fractions	8.08.03 <b>Proficient</b> Focus only on problems #30-41 on page 172 Ch. 4-5. Problems #14-28 are not necessary.  6.08.05 <b>Proficient</b>
4-6 <b>Combine w/4-5</b>	Multiplying and Dividing Monomials	
4-7 <b>Skip</b>	Negative Exponents	
4-8 <b>Teach</b>	Scientific Notation	6.08.01 <b>Proficient</b>  6.08.04 <b>Basic</b> more applications are needed. Technology note: use scientific calculators. Connections to Science, and other subjects.

Chapter 5 **Rational Numbers**

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal.Grade.Objective/Comments</i>
5-1 <b>Skip</b>	Writing Fractions as Decimals	Previously covered.
5-2 <b>Skip</b>	Rational Numbers	Covered in Ch. 9-2 while introducing 5-3.
5-3 <b>Combine w/5-4</b>	Multiplying Rational Numbers	Refer to Ch. 9-2 p. 441. Show Venn Diagram including irrational numbers (roots, pi, etc.)  6.08.12 <b>Proficient</b>  <b>*Postpone <u>all</u></b> measurement problems till later.*
5-4 <b>Combine w/5-3</b>	Dividing Rational Numbers	
5-5 <b>Combine w/5-7</b>	Adding and Subtracting Like Fractions	6.08.09 <b>Basic</b> Students should already be proficient with the use of calculators. Emphasize p. 223 #39-44
5-6 <b>SKIP</b>	Least Common Multiple	SKIP Covered in previous grades.
5-7 <b>Combine w/5-5</b>	Adding and Subtracting Unlike Fractions	6.08.09 <b>Basic</b>
5-8 <b>Postpone till Ch.12</b>	Measures of Central Tendency	10.08.05 <b>Proficient</b>
5-9 <b>Teach</b>	Solving Equations with Rational Numbers	8.08.12 <b>Proficient</b>

Chapter 6 **Ratio, Proportions, and Percents**

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal.Grade.Objective/Comments</i>
6-1 <b>Teach</b>	Ratios and Rates	6.08.15 <b>Basic</b> Use application problems for extension. 7.08.05 <b>Proficient</b>
6-2 <b>Teach</b>	Using Proportions	6.08.16 <b>Proficient</b>
6-3 <b>Skip</b>	Scale Drawings and Models	Covered in 7 <sup>th</sup> Grade, and in rotation classes.
6-4 <b>Combine w/ 6-5</b>	Fractions, Decimals, Percents	*Combine these two sections, but spend a greater amount of time on Ch. 6-5.  6.08.03 <b>Proficient</b> 6.08.17 <b>Proficient</b> 6.08.16 <b>Proficient</b>
6-5 <b>Combine w/ 6-4</b>	Using the Percent Proportion	
6-6 <b>Postpone till 4<sup>th</sup> Q.</b>	Finding Percents Mentally	Kids are using calculators. Should be done in class without calculators or cell phones.
6-7 <b>Teach</b>	Using Percent Equations	6.08.18 <b>Proficient</b> Supplement with a wide variety of application problems. 8.08.13 <b>Basic</b>
6-8 <b>Teach</b>	Percent of Change	6.08.18 <b>Proficient</b>
6-9 <b>Teach</b>	Probability and Predictions	10.08.06 <b>Basic</b> Extended in Ch. 12.

Chapter 7 **Equations and Inequalities**

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal.Grade.Objective/Comments</i>
7-1 <b>Teach</b>	Solving Equations with Variables on Each Side	8.08.12 <b>Proficient</b>
7-2 <b>Teach</b>	Solving Equations with Grouping Symbols	8.08.12 <b>Proficient</b>
7-3 <b>Combine w/7-4</b>	Inequalities	8.08.10 <b>Basic</b>
7-4 <b>Combine w/7-3</b>	Solving Inequalities by Adding or Subtracting	8.08.12 <b>Proficient</b>
7-5 <b>Teach</b>	Solving Inequalities by Multiplying or Dividing	8.08.10 <b>Basic</b> fails to cover unions & intersections 8.08.12 <b>Proficient</b>
7-6 <b>Postpone till 4<sup>th</sup> Q.</b>	Solving Multi-Step Inequalities	8.08.11 8.08.12

## Chapter 8 **Functions and Graphing**

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal.Grade.Objective/Comments</i>
8-1 <b>Teach</b>	Functions	8.08.08 <b>Proficient</b>
<b>Postpone</b>	Graphing Calculator Investigation	Good lesson to demonstrate on the overhead. Wait till students are stronger, and more comfortable with table/graphing skills.
8-2 <b>Teach</b>	Linear Equations in Two Variables	8.08.07 <b>Basic</b> lacking interpreting graph 8.08.08 <b>Proficient</b>
<b>Skip</b>	Reading Mathematics Function Language $y = f(x)$	Covered in Algebra 1.
8-3 <b>Teach over 2 days</b>	Graphing Linear Equations Using Intercepts	8.08.07 <b>Proficient</b> 8.08.08 <b>Proficient</b> 8.08.09 <b>Proficient</b>
8-4 <b>Teach over 2 days</b>	Slope	8.08.07 <b>Proficient</b> 8.08.08 <b>Proficient</b> 8.08.09 <b>Proficient</b>
8-5 <b>Teach</b>	Rate of Change	8.08.06 <b>Proficient</b> * <b>SKIP</b> direct variation. Covered in Algebra 1.
8-6 <b>Postpone till 4<sup>th</sup> Q</b>	Slope-Intercept Form	Covered in Algebra 1.

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal. Grade. Objective/Comments</i>
<b>Postpone till 4<sup>th</sup> Q</b>	Graphing Calculator Investigation Families of Graphs	Covered in Algebra 1.
<b>8-7 Postpone till 4<sup>th</sup> Q</b>	Writing Linear Equations	Covered in Algebra 1.
<b>8-8 Skip</b>	Line of Best Fit	Covered in Chapter 1-7.
<b>8-9 Skip</b>	Solving Systems of Equations	Covered in Algebra 1.
<b>8-10 Skip</b>	Graphing Inequalities	Covered in Algebra 1.
<b>Skip</b>	Graphing Calculator Investigation	Covered in Algebra 1.

Chapter 9 **Real Numbers and Right Triangles**

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal.Grade.Objective/Comments</i>
9-1 <b>Teach</b>	Squares and Square Roots	6.08.14 6.08.09 <b>Basic</b> Missing cube roots. Include cube roots on worksheet (enrichment), and placing between two whole numbers.
9-2 <b>Teach</b>	Real Number System	6.08.06 <b>Proficient</b>
9-3 <b>Combine w/9-4</b>	Angles	9.08.02 <b>Basic</b> Need to include more problems like p. 457 #34-36
9-4 <b>Combine w/9-3</b>	Triangles	7.08.01 <b>Basic</b> Must include use of rulers
<b>Optional</b>	Algebra Activity The Pythagorean Theorem	
9-5 <b>Teach</b>	The Pythagorean Theorem	9.08.03 <b>Proficient</b> 9.08.01 <b>Basic</b> 7.08.06 <b>Proficient</b>
9-6 <b>Skip</b>	The Distance and Midpoint Formulas	Covered in Algebra 1.
9-7 <b>Teach</b>	Similar Triangles and Indirect Measurement	9.08.11 <b>Proficient</b> 7.08.06 <b>Proficient</b>
9-8 <b>Skip</b>	Sine, Cosine, and Tangent Ratios	Covered in Algebra 1.

## Chapter 10 Two-Dimensional Figures

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal.Grade.Objective/Comments</i>
10-1 <b>Teach</b>	Line and Angle Relationships	9.08.08 <b>Basic</b> Missing radius of circle 9.08.09 <b>Proficient</b>
<b>Optional</b>	Algebra Activity Constructions	
10-2 <b>Teach</b>	Congruent Triangles	9.08.11 <b>Proficient</b>
<b>Combine w/10-3</b>	Algebra Activity Symmetry	9.08.06 <b>Proficient</b>
10-3 <b>Teach</b>	Transformation on the Coordinate Plane	9.08.07 <b>Basic</b> Missing different translations when moving more than once.
<b>Skip</b>	Algebra Activity Dilations	Not in standards
10-4 <b>Teach</b>	Quadrilaterals	9.08.02 <b>Proficient</b>
<b>Optional</b>	Algebra Activity Area and Geoboards	
10-5 <b>Teach</b>	Area: Parallelograms, Triangles, and Trapezoids	7.08.02 <b>Basic</b> Must include sketching a figure with a ruler. 9.08.01 <b>Basic</b>
10-6 <b>Teach</b>	Polygons	* <b>Begin</b> lesson with Reading activity p. 526. 9.08.01 <b>Basic</b> Classifying, no solving
<b>Postpone till 4<sup>th</sup> Q.</b>	Algebra Activity Tessellations	
10-7 <b>Teach</b>	Circumference and Area of a Circle	7.08.02 <b>Proficient</b>  9.08.04 <b>Proficient</b>
10-8 <b>Teach</b>	Area: Irregular Shapes	7.08.02 <b>Proficient</b> Include Skills Practice page. (2 day lesson min.)

Chapter 11 **Three-Dimensional Figures**

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal.Grade.Objective/Comments</i>
<b>11-1 Teach</b>	Three-Dimensional Figures	Begin 2 day lesson with p. 554-555. 9.08.10 <b>Proficient</b>
<b>11-2 Teach</b>	Volume: Prisms and Cylinders	7.08.04 <b>Proficient</b>
<b>11-3 Optional</b>	Volume: Pyramids and Cones	7.08.04 <b>Proficient</b> Not on ISAT
<b>11-4 Teach</b>	Surface Area: Prisms and Cylinders	7.08.04 <b>Proficient</b>
<b>11-5 Optional</b>	Surface Area: Pyramids and Cones	7.08.04 <b>Proficient</b> Not on ISAT
<b>11-6 Skip</b>	Similar Solids	Covered earlier
<b>11-7 Skip</b>	Precision and Significant Digits	Covered earlier

Chapter 12 **More Statistics and Probability**

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal.Grade.Objective/Comments</i>
12-1 <b>Teach</b>	Stem-and Leaf Plots	Begin Chapter with Ch. 5-8 Central Tendency. *Incorporate other subjects into this Chapter. 10.08.01 <b>Basic</b> No interpreting
12-2 <b>Optional</b>	Measures of Variation	10.08.01 <b>Basic</b> Missing interpretation. 10.08.03 <b>Basic</b>
12-3 <b>Optional</b>	Box-and-Whisker Plots	
<b>Skip</b>	Graphing Calculator Investigation Box-and Whisker Plots	
12-4 <b>Teach</b>	Histograms	10.08.01 <b>Basic</b> Lacking interpretation. 10.08.03 <b>Basic</b>
<b>Skip</b>	Graphing Calculator Investigation Histograms	
12-5 <b>Teach</b>	Misleading Statistics	10.08.01 <b>Basic</b> Lacking interpretation. 10.08.02 <b>Basic</b>
12-6 <b>Teach</b>	Counting Outcomes	10.08.08 <b>Proficient</b>
<b>Skip</b>	Algebra Activity Probability and Pascal's Triangle	
12-7 <b>Teach</b>	Permutations and Combinations	10.08.08 <b>Proficient</b>
12-8 <b>Skip</b>	Odds	Covered in Algebra 1.
12-9 <b>Teach</b>	Probability of Compound Events	10.08.06 <b>Proficient</b> 10.08.07 <b>Proficient</b>

Chapter 13 **Polynomials and Nonlinear Functions (Optional)**

<i>Section</i>	<i>Math Skills and Concepts</i>	<i>State Goal.Grade.Objective/Comments</i>
13-1	Polynomials	
	Algebra Activity Modeling Polynomials with Algebra Tiles	
13-2	Adding Polynomials	
13-3	Subtracting Polynomials	
	Algebra Activity Modeling Multiplication of Polynomials with Algebra Tiles	
13-4	Multiplying a Polynomial by a Monomial	
	Graphing Calculator Investigation Histograms	
13-5	Linear and Nonlinear Functions	
13-6	Graphing Quadratic and Cubic Functions	
	Graphing Calculator Investigation Families of Quadratic Functions	

Missing Goals

7.08.03 Estimating Measurements.