AoPS Prealgebra – AoPS Sections to Brilliant Lessons

Chapter 1: Properties of Arithmetic

AoPS Section	Brilliant Lessons
1.1 Why Start with Arithmetic?	Growing and Shrinking; A Pair at Every Distance; Absolute Value
1.2 Addition	Adding Any Fractions; Adding Fractions; Adding Large Integers
1.3 Multiplication	Calculating Percent Decrease; Expressing Multiples; Fraction of Any Fraction
1.4 Negation	Finding Half; Combining Parts; Splitting Parts
1.5 Subtraction	Absolute Value and Distance; Adding The Opposite; Adding in Any Order
1.6 Reciprocals	Fraction of Any Fraction; Dividing Fractions by Fractions; Turning Multiplication Into Division
1.7 Division	Dividing Whole Numbers; Dividing Fractions by Fractions; Dividing Decimals
1.8 Summary Review Problems Challenge Problems	Adding Large Integers; Dividing Whole Numbers; Absolute Value and Distance

Chapter 2: Exponents

AoPS Section	Brilliant Lessons
2.1 Exponent Basics	Exponent Review; Exponent Properties; Exponent Rules
2.2 Exponents and Multiplication	Exponent Properties; Exponent Rules; Rewriting Exponents
2.3 Exponents and Division	Negative Exponents; Exponent Rules; Dividing by Powers of Ten
2.4 Raising a Product	Exponent Rules; Exponent Review; Powers of Powers
2.5 Summary Review Problems Challenge Problems	Exponent Review; Exponent Rules; Negative Exponents

Chapter 3: Number Theory

AoPS Section	Brilliant Lessons
3.1 Divisibility and Primes	Prime Patterns; Testing for Primes; Divisibility Rules
3.2 Prime Factorization	Factor Trees; Prime Factorization; Fundamental Theorem of Arithmetic
3.3 Greatest Common Divisors	Greatest Common Factor; Factoring Numbers; Prime Factors and GCF
3.4 Least Common Multiples	Least Common Multiple; Relating LCM and GCF; Multiples and Factors
3.5 Summary Review Problems Challenge Problems	Prime Patterns; Greatest Common Factor; Least Common Multiple

Chapter 4: Fractions

AoPS Section	Brilliant Lessons
4.1 What is a Fraction?	Finding Half; Splitting Parts; Combining Parts
4.2 Equivalent Fractions	Equivalent Fractions; Splitting Parts; Combining Parts
4.3 Comparing Fractions	Comparing Fractions; Ordering Fractions; Benchmark Fractions
4.4 Adding and Subtracting Fractions	Adding Fractions; Subtracting Fractions; Adding Any Fractions
4.5 Multiplying Fractions	Multiplying Fractions; Fraction of Any Fraction; Multiplying Mixed Numbers
4.6 Summary Review Problems Challenge Problems	Adding Fractions; Multiplying Fractions; Comparing Fractions

Chapter 5: Equations and Inequalities

AoPS Section	Brilliant Lessons
5.1 Variables	Using Variables; Building Expressions; Function Machines
5.2 Expressions	Building Expressions; Comparing Expressions; Rearranging Expressions
5.3 Equations	Solving an Equation; Balancing with Constants; Balancing with Variables
5.4 Inequalities	Inequalities on a Number Line; Which Is Greater; Interpreting Inequalities
5.5 Summary Review Problems Challenge Problems	Solving an Equation; Rearranging Expressions; Inequalities on a Number Line

Chapter 6: Decimals

AoPS Section	Brilliant Lessons
6.1 Decimal Basics	Place Value; Decimals on the Number Line; Comparing Decimals
6.2 Decimal Arithmetic	Adding Decimals; Subtracting Decimals; Multiplying Decimals
6.3 More Decimal Arithmetic	Dividing Decimals; Scaling With Decimals; Estimating With Decimals
6.4 Summary Review Problems Challenge Problems	Adding Decimals; Dividing Decimals; Estimating With Decimals

Chapter 7: Ratios, Conversions, and Rates

AoPS Section	Brilliant Lessons
7.1 Ratios	Setting Up Ratios; Making Batches; Scale Factor
7.2 Unit Rates	Computing Unit Rates; How Much for One; Finding Unit Cost
7.3 Conversions	Using Unit Prices; Using Unit Prices to Find Cost; Controlling Costs

AoPS Section	Brilliant Lessons
7.4 More About Rates	Comparing Rates; Graphing Relationships; Graphing from an Equation
7.5 Summary Review Problems Challenge Problems	Setting Up Ratios; Computing Unit Rates; Using Unit Prices

Chapter 8: Percents

AoPS Section	Brilliant Lessons
8.1 Percent Basics	Calculating Percentages; Working with Percentages; Percent Discount
8.2 Percent Increase and Decrease	Calculating Percentages; Percent Discount; Working with Percentages
8.3 Percent of a Quantity	Calculating Percentages; Working with Percentages; Using Unit Prices
8.4 Summary Review Problems Challenge Problems	Calculating Percentages; Percent Discount; Comparing Offers

Chapter 9: Square Roots

AoPS Section	Brilliant Lessons
9.1 Squares	Area and Squares; Squaring Numbers; Perfect Squares
9.2 Square Roots	Square Roots; Estimating Square Roots; Square Roots on the Number Line
9.3 Approximating Square Roots	Estimating Square Roots; Square Roots on the Number Line; Approximating Irrationals
9.4 Summary Review Problems Challenge Problems	Square Roots; Estimating Square Roots; Perfect Squares

Chapter 10: Angles

AoPS Section	Brilliant Lessons
10.1 Angle Basics	Measuring Angles; Types of Angles; Angle Vocabulary
10.2 Angle Relationships	Angle Relationships; Complementary and Supplementary Angles; Vertical Angles
10.3 Parallel Lines and Transversals	Angles With Parallel Lines; Interior and Exterior Angles; Transversal Angle Relationships
10.4 Summary Review Problems Challenge Problems	Angle Relationships; Measuring Angles; Angles With Parallel Lines

Chapter 11: Perimeter and Area

AoPS Section	Brilliant Lessons
11.1 Perimeter	Perimeter of Polygons; Measuring Perimeter; Perimeter and Scale
11.2 Area of Triangles	Area of Triangles; Decomposing Shapes; Relating Parallelograms and Triangles
11.3 Area of Quadrilaterals	Area of Parallelograms; Area of Trapezoids; Decomposing Shapes
11.4 Area of Circles	Area of Circles; Circumference and Area; Using Pi in Area
11.5 Summary Review Problems	Perimeter of Polygons; Area of Triangles; Area of
Challenge Problems	Parallelograms

Chapter 12: Right Triangles and Quadrilaterals

AoPS Section	Brilliant Lessons
12.1 Pythagorean Theorem	Pythagorean Theorem; Distance in the Plane; Right Triangle Distances
12.2 Special Right Triangles	Special Right Triangles; Pythagorean Triples; Applying the Pythagorean Theorem
12.3 Quadrilateral Review	Quadrilateral Types; Properties of Quadrilaterals; Classifying Quadrilaterals
12.4 Summary Review Problems	Pythagorean Theorem; Special Right Triangles; Quadrilateral
Challenge Problems	Types

Chapter 13: Data and Statistics

AoPS Section	Brilliant Lessons
13.1 Displaying Data	Visualizing Data Distributions; Dot Plots; Histograms
13.2 Measures of Center	Mean and Median; Comparing Center and Spread; Interpreting Measures of Center
13.3 Measures of Spread	Range and Interquartile Range; Variability; Interpreting Spread
13.4 Summary Review Problems	Visualizing Data Distributions; Mean and Median; Range and
Challenge Problems	Interquartile Range

Chapter 14: Counting and Probability

AoPS Section	Brilliant Lessons
14.1 Counting Strategies	Counting Outcomes; Systematic Listing; Multiplication Principle
14.2 Basic Probability	Sample Space Exploration; Simple Probability; Interpreting Probability
14.3 Compound Events	Simple Compound Events; Independent Events; Dependent Events

AoPS Section	Brilliant Lessons
14.4 Summary Review Problems	Counting Outcomes; Sample Space Exploration; Simple
Challenge Problems	Compound Events

Chapter 15: Problem-Solving Strategies

AoPS Section	Brilliant Lessons
15.1 Find a Pattern	
15.2 Make a List	
15.3 Draw a Picture	
15.4 Work Backwards	
15.5 Summary Review Problems	
Challenge Problems	