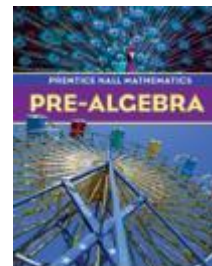


Pre-Algebra

7th or 8th Grade - Text

Course Description

Laurel Springs' Pre-Algebra program, based on Pearson Publishing's Pre-Algebra textbook, provides students with a solid preparation for algebra and geometry. Students will build on previously developed arithmetic skills to expand their algebraic thinking skills. Students will cover topics including solving equations and inequalities containing fractions and decimals, ratios, linear functions, graphing, spatial thinking, finding area and volume of geometric figures, and right triangles. The text also provides numerous opportunities to assess basic skills along with abundant remediation and intervention activities found throughout the course. Students benefit from the use of a CD-ROM containing an interactive textbook with videos, practice activities, and self check quizzes that give students immediate feedback. In all, this is a comprehensive program that will provide students with a solid foundation for higher level math courses.



Learning Objectives:

Students know the properties of, and compute with, rational numbers expressed in a variety of forms

Students use exponents, powers, and roots and use exponents in working with fractions

Students express quantitative relationships by using algebraic terminology, expressions, equations, inequalities, and graphs

Students graph and interpret linear and some nonlinear functions

Students solve simple linear equations and inequalities over the rational numbers

Students interpret and evaluate expressions involving integer powers and simple roots

Students make decisions about how to approach problems

Students use strategies, skills, and concepts in finding solutions

Students determine a solution is complete and move beyond a particular problem by generalizing to other situations

Syllabus Sample

Week 6

What You Will Learn:

- You will learn how to solve one-step inequalities using subtraction and addition.
- You will learn how to solve one-step inequalities using division and multiplication.

Assignment List

- Read Lesson 2-9, pages 108-109
- Exercises on pages 110-111: Problems: 1, 7, 9, 10, 11, 17, 20, 23, 25, 31, 32, 34, 37.
- Read Lesson 2-10, pages 112-114
- Exercises on pages 115-116: Problems: 9, 12, 14, 17, 22, 26, 28, 30, 33, 35, 45.
- Complete the first Milestone Assignment



Assignment Instructions

- This week marks your first Milestone Assignment. Before you begin on the Milestone, there are a couple more topics to cover in Chapter 2. Begin this week on page 108 in your textbook or CD-ROM. Lesson 2-9 will teach you how to use addition and subtraction to solve inequalities.
 - ✓ **Resource:** There is an Interactivity on your CD-ROM in Lesson 2-9 that lets you practice solving inequalities. Click on 2-9 on the left hand side of the screen and then click on *Interactivity*. Choose the symbol and drag the point along the number line until you mark the solution. Click *Show Solution* to check your answer with the correct one. Keep practicing until you are sure you understand how to solve these inequalities.
- Complete the following exercises on pages 110 and 111. **Problems: 1, 7, 9, 10, 11, 17, 20, 23, 25, 31, 32, 34, and 37.**
- Finish the chapter by reading Lesson 2-10. Now you will use division and multiplication to solve inequalities.

- ✓ **Resource:** Practice solving on your CD-ROM using the Interactivity in Lesson 2-10. It works the same as the activity in 2-9. Practice until you get it!
- ✓ **Tip:** When you multiply or divide each side of an inequality by a negative number, you must reverse the direction of the inequality symbol! If you don't reverse the direction of the symbol, the resulting inequality does not have the same meaning as the original inequality. Always check your solution by plugging a number into the original inequality to see if your solution makes sense.
- Complete the following exercises on pages 115 and 116. **Problems: 9, 12, 14, 17, 22, 26, 28, 30, 33, 35, and 45.**



- It is time to complete your first Milestone Assignment. These assignments are cumulative and this one will cover concepts from Weeks 1 through 6. The information for this assignment can be found in your *Answers, Quizzes, and Milestones booklet*. Please choose to complete either the Project or the Test and make sure you read the directions thoroughly. Good Luck and Have Fun!

Please send all work from Weeks 5 and 6 to your teacher. This includes problems from Lessons 2-5 through 2-10, and the first Milestone Assignment. If you would like these returned to you, please include a self-addressed, stamped envelope. Please retain a copy of the Milestone Assignment for your records!

Pre-Algebra Milestone Assignment 1 Week 6

Directions: For your first Milestone Assignment you can choose to complete the project listed below OR you can complete the test located following the project description. It is up to you!

OPTION 1



Project Description

Have you ever used a balance in your science class? Balances are used to make very precise measurements in science, industry, and government. The United States Mint, for example, ensures that the coins it produces meet exact specifications. You can make your own version of a balance and use it to compare the masses of different objects. In this chapter project, you will make a simple balance scale and use it to write and solve equations and inequalities for the masses of different coins. Then you'll graph your solutions and draw diagrams to illustrate your experiments.

List of Materials

- A ruler
- A pencil
- Several coins, including pennies, nickels, and quarters
- Several sheets of paper
- Several marking pens in different colors



Activities

Activity 1: Creating

Use a ruler and a pencil to make a simple balance scale. Place the pencil on a table or other flat surface and then find the point on the ruler where it will balance on the pencil. Label this point zero. Label points four inches in each direction from the balance point Mass 1 and Mass 2. Practice using your balance scale by placing one penny at Mass 1 and another at Mass 2. Move the pennies around slightly to make the ruler balance on the pencil.

Activity 2: Calculating

Place a nickel at Mass 1 on your balance scale. At Mass 2, place as many pennies as you need to balance the scale. The nickel has a mass of about 5 g. Write and solve an equation to find the mass of a penny in grams. Let p represent the mass of a penny.

Activity 3: Graphing

On your balance scale, place two quarters at Mass 1 and two nickels at Mass 2. Based on what you observe with the coins on the balance scale, write and solve an inequality for the mass of a quarter. Recall from the previous activity that the mass of a nickel is about 5 g. Then add another nickel at Mass 2 and observe the balance scale. Write and solve a second, different inequality for the mass of a quarter that you come up with on your own. Graph your two solutions on one number line. Use your graph to determine an approximate mass for a quarter. Now, use the same type of procedures to figure out the approximate mass of a dime. You can relate the mass of a dime to either the mass of a penny or nickel; just be sure to clearly write and explain your inequality and graph.

Activity 4: Diagramming

Draw diagrams to show your balance scale and your balancing experiments. For each diagram, include the names of the coins, the equation or inequality you solved, and the solution. For the inequalities, include your graph.

Reflect and Revise

Look back at your findings. Do they make sense? Ask a friend or someone at home to review your diagrams. Are they clearly labeled? Are the equation, inequalities, graph, and solutions correct? If necessary, make changes to improve your diagrams.

Checklist - Have you done all of the following?

- _____ Found the right balance point on the balance scale
- _____ Chosen a variable to represent the mass of the penny, dime, nickel and quarter
- _____ Correctly diagrammed all of the experiments
- _____ Wrote and solved equations and inequalities that represent these experiments
- _____ Remembered that the actual mass of the quarter is in the range where the two graphs overlap

Contact your teacher to let them know how you plan on submitting your work. Will you mail everything, take pictures and email them, or find another creative way of submitting your project? Your teacher will assess your *Milestone Assignment* according to the rubric located on the next page.

Milestone Assignment 1
Option 1 Rubric

Skills for Mastery	Exemplary	Achieved	Developing	Comments
Equations and Inequalities	Student wrote and solved all equations and inequalities accurately.	Student wrote and solved most equations and inequalities accurately.	Student did not accurately write or correctly solve the equations and inequalities.	
Graph	Student's graph shows the possible mass of a quarter and dime correctly.	Student's graph is fairly accurate for showing both the masses of the quarter and dime.	Student's graph does not make sense and/or it does not include the mass for both objects.	
Diagrams	Student's diagrams are complete, descriptive, well organized, and easy to read.	Student's diagrams are mostly complete and descriptive; however they are a bit hard to follow.	Student's diagrams are hard to follow and/or they are not descriptive or complete.	
Logic and Reasoning	Student's work demonstrates logic and reasoning throughout the entire assignment.	Student's work demonstrates logic and reasoning throughout most of the assignment.	Student's work does not demonstrate logic and/or reasoning in most of the assignment.	
Clear Communication	The student's work is clear and effective throughout the assignment. It is easy to follow and neatly put together.	The student's work is clear and effective in most parts of the assignment, but is not easy to follow.	The student's work is not easy to follow and the concepts covered are not very clear or effective.	

Outline for Pre Algebra

Course Outline:

Unit 1: Expressions and Integers & Solving One-Step Equations and Inequalities

Week 1: Lessons 1-1 through 1-3

- A) Variables and Expressions
- B) The Order of Operations
- C) Writing and Evaluating Expressions

Week 2: Lessons 1-4 through 1-7

- A) Integers and Absolute Value
- B) Adding Integers
- C) Subtracting Integers
- D) Inductive Reasoning

Week 3: Lessons 1-8 through 1-10

- A) Problem Solving: Patterns
- B) Multiplying and Dividing Integers
- C) The Coordinate Plane
- D) Quiz #1

Week 4: Lessons 2-1 through 2-4

- A) Properties of Numbers
- B) The Distributive Property
- C) Simplifying Variable Expressions
- D) Variables and Equations

Week 5: Lessons 2-5 through 2-8

- A) Solving Equations by Adding or Subtracting
- B) Solving Equations by Multiplying or Dividing
- C) Problem Solving: Guess, Check, and Revise
- D) Inequalities and their Graphs

Week 6: Lessons 2-9 through 2-10 and Milestone Assignment #1

- A) Solving One-Step Inequalities by Adding or Subtracting
- B) Solving One-Step Inequalities by Multiplying or Dividing
- C) Milestone Assignment #1

Unit 2: Decimals and Equations & Factors, Fractions, and Exponents

Week 7: Lessons 3-1 through 3-3

- A) Rounding and Estimating
- B) Estimating Decimal Products and Quotients
- C) Mean, Median, and Mode

Week 8: Lessons 3-4 through 3-7

- A) Using Formulas
- B) Solving Equations by Adding or Subtracting Decimals
- C) Solving Equations by Multiplying or Dividing Decimals
- D) Using the Metric System

Week 9: Lessons 3-8 through 4-2

- A) Problem Solving: Act it Out
- B) Divisibility and Factors
- C) Exponents
- D) Quiz #2

Week 10: Lessons 4-3 through 4-5

- A) Prime Factorization and Greatest Common Factor
- B) Simplifying Fractions
- C) Problems Solving: Solve a Simpler Problem

Week 11: Lessons 4-6 through 4-8

- A) Rational Numbers
- B) Exponents and Multiplication
- C) Exponents and Division

Week 12: Lesson 4-9 and Milestone Assignment #2

- A) Scientific Notation
- B) Milestone Assignment #2

Unit 3: Operations with Fractions & Ratios, Proportions, and Percents

Week 13: Lessons 5-1 through 5-4

- A) Comparing and Ordering Rational Numbers
- B) Fractions and Decimals
- C) Adding and Subtracting Fractions
- D) Multiplying and Dividing Fractions

Week 14: Lessons 5-5 through 5-8

- A) Using Customary Units of Measurement
- B) Problem Solving: Work Backward
- C) Solving Equations by Adding or Subtracting Fractions
- D) Solving Equations by Multiplying or Dividing Fractions

Week 15: Lessons 5-9 through 6-2

- A) Powers of Products and Quotients
- B) Ratios and Unit Rates
- C) Proportions
- D) Quiz #3

Week 16: Lessons 6-3 through 6-6

- A) Similar Figures and Scale Drawings
- B) Probability
- C) Fractions, Decimals, and Percents
- D) Proportions and Percents

Week 17: Lessons 6-7 through 6-9

- A) Percents and Equations
- B) Percent of Change
- C) Markup and Discount

Week 18: Milestone Assignment #3

- A) Review of material
- B) 1st Semester Exam - Milestone Assignment #3

Unit 4: Solving Equations and Inequalities & Linear Functions and Graphing

Week 19: Lessons 7-1 through 7-3

- A) Solving Two-Step Equations
- B) Solving Multi-Step Equations
- C) Multi-Step Equations with Fractions and Decimals

Week 20: Lessons 7-4 through 7-6

- A) Problems Solving: Write and Equation
- B) Solving Equations with Variables on Both Sides
- C) Solving Two-Step Inequalities

Week 21: Lessons 7-7 through 7-8

- A) Transforming Formulas
- B) Simple and Compound Interest
- C) Quiz #4

Week 22: Lessons 8-1 through 8-3

- A) Relations and Functions
- B) Equations with Two Variables
- C) Slope and y-intercept

Week 23: 8-4 through 8-8

- A) Writing Rules for Linear Functions
- B) Solving Systems of Linear Equations
- C) Graphing Linear Inequalities

Week 24: Milestone Assignment #4

- A) Milestone Assignment #4

Unit 5: Spatial Thinking & Area and Volume

Week 25: Lessons 9-1 through 9-4

- A) Introduction to Geometry: Points, Lines, and Planes
- B) Angle Relationships and Parallel Lines
- C) Classifying Polygons
- D) Problem Solving: Draw a Diagram

Week 26: Lessons 9-5 through 9-8

- A) Congruence
- B) Circles
- C) Translations

Week 27: Lessons 9-9 through 10-1

- A) Symmetry and Reflections
- B) Rotations
- C) Area: Parallelograms
- D) Quiz #5

Week 28: Lessons 10-2 through 10-5

- A) Area: Triangles and Trapezoids
- B) Area: Circles
- C) Space Figures
- D) Surface Area: Prisms and Cylinders

Week 29: Lessons 10-6 through 10-8

- A) Surface Area: Pyramids, Cones, and Spheres
- B) Volume: Prisms and Cylinders
- C) Problem Solving: Make a Model

Week 30: Lesson 10-9 and Milestone Assignment #5

- A) Volume: Pyramids, Cones, and Spheres
- B) Milestone Assignment #5

Unit 6: Right Triangles in Algebra & Data Analysis and Probability

Week 31: Lessons 11-1 through 11-3

- A) Square Roots and Irrational Numbers
- B) The Pythagorean Theorem
- C) Distance and Midpoint Formulas

Week 32: Lessons 11-5 through 11-7

- A) Special Right Triangles
- B) Sine, Cosine, and Tangent Ratios
- C) Angles of Elevation and Depression

Week 33: Lessons 12-1 through 12-3

- A) Frequency Tables, Line Plots and Histograms
- B) Box-and-Whisker Plots
- C) Using Graphs to Persuade
- D) Quiz #6

Week 34: Lessons 12-4 through 12-6

- A) Counting Outcomes and Theoretical Probability
- B) Independent and Dependent Events
- C) Permutations and Combinations

Week 35: Lessons 12-7 through 12-9

- A) Experimental Probability
- B) Random Samples and Surveys
- C) Problems Solving: Simulate the Problem

Week 36: Milestone Assignment #6

- A) 2nd Semester Exam - Milestone Assignment #6
- B) Course Evaluation