

*Curriculum Guide for Pre-Algebra*

**Unit 1: Variable, Expressions, & Integers**

2 Weeks

PA: 1, 2, 3, 9

**Biblical Worldview Essential Questions**

**Where did Math originate?**

**Why is Math possible?**

**What should we expect as we use Math?**

**How should we use Math?**

**What is the purpose of using symbols, notations, and conventions in Math?**

**What enables us to memorize facts and algorithms?**

**What are you relying on every time you solve a math problem?**

<b>Objectives</b>	<b>Methods</b>	<b>Resources</b>	<b>Assessment</b>
The students will 1. write and evaluate variable expressions 2. perform operations with integers 3. plot points in a coordinate plane	<ul style="list-style-type: none"><li>• teacher lecture</li><li>• teacher working examples on the board</li><li>• teacher showing problems on overhead projector</li><li>• student guided practice of problems in book</li><li>• student taking notes</li><li>• cooperative learning groups</li><li>• individual assistance</li><li>• partner work</li><li>• worksheets</li><li>• homework</li></ul>	<ul style="list-style-type: none"><li>• <u>Pre-Algebra</u>, McDougal Littell, 2005</li><li>• <u>Algebra with Pizzazz!, Books A, B, C, and D</u>, Creative Publications, 1989</li><li>• <u>Practical Strategies for Strengthening Your Students' Learning of Algebra Concepts (Grades 7-12)</u>, Bureau of Education &amp; Research, 2007</li><li>• Manipulatives</li><li>• Posters</li></ul>	<ul style="list-style-type: none"><li>• Completion of homework</li><li>• Board work</li><li>• Participation in class activities</li><li>• Answering questions during class work</li><li>• Quizzes</li><li>• Notebook quizzes</li><li>• Speed drills</li><li>• Mid-chapter test</li><li>• Chapter test</li></ul>

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**Unit 2: Solving Equations**

3 Weeks

PA: 1, 2, 3, 4, 9

**Biblical Worldview Essential Questions**

**What is the purpose of using symbols, notations, and conventions in Math?**

**What enables us to memorize facts and algorithms?**

**What are you relying on every time you solve a math problem?**

**How will understanding equalities help us better understand how to work with real-life relationships?**

**How can we see God's faithfulness when we use math properties?**

<b>Objectives</b>	<b>Methods</b>	<b>Resources</b>	<b>Assessment</b>
The students will 4. use mathematical properties to simplify variable expressions 5. write and solve one-step equations 6. perform operations with positive and negative decimals	<ul style="list-style-type: none"><li>• teacher lecture</li><li>• teacher working examples on the board</li><li>• teacher showing problems on overhead projector</li><li>• student guided practice of problems in book</li><li>• student taking notes</li><li>• cooperative learning groups</li><li>• individual assistance</li><li>• partner work</li><li>• worksheets</li><li>• homework</li></ul>	<ul style="list-style-type: none"><li>• <u>Pre-Algebra</u>, McDougal Littell, 2005</li><li>• <u>Algebra with Pizzazz!</u>, <u>Books A, B, C, and D</u>, Creative Publications, 1989</li><li>• <u>Practical Strategies for Strengthening Your Students' Learning of Algebra Concepts (Grades 7-12)</u>, Bureau of Education &amp; Research, 2007</li><li>• Manipulatives</li><li>• Posters</li></ul>	<ul style="list-style-type: none"><li>• Completion of homework</li><li>• Board work</li><li>• Participation in class activities</li><li>• Answering questions during class work</li><li>• Quizzes</li><li>• Notebook quizzes</li><li>• Speed drills</li><li>• Mid-chapter test</li><li>• Final test</li></ul>

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**Unit 3: Multi-Step Equations and Inequalities**

3½ Weeks

PA: 1, 2, 3, 9

**Biblical Worldview Essential Questions**

**How does math help us better understand God’s world?**

**How do notations help us see that God created a universe more intricate than we can imagine?**

**How can inequalities help us express things that cannot be equated with anything else, ie God?**

**Can you name mathematical consistencies that enable you to solve equations that cause you to praise God?**

**How does God govern creation such that we can manipulate unknowns to confidently solve problems?**

**How can math be a witnessing tool?**

<b>Objectives</b>	<b>Methods</b>	<b>Resources</b>	<b>Assessment</b>
The students will 7. write and solve multi-step equations 8. write and solve inequalities	<ul style="list-style-type: none"> <li>• teacher lecture</li> <li>• teacher working examples on the board</li> <li>• teacher showing problems on overhead projector</li> <li>• student guided practice of problems in book</li> <li>• student taking notes</li> <li>• cooperative learning groups</li> <li>• individual assistance</li> <li>• partner work</li> <li>• worksheets</li> <li>• homework</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Pre-Algebra</u>, McDougal Littell, 2005</li> <li>• <u>Algebra with Pizzazz!, Books A, B, C, and D</u>, Creative Publications, 1989</li> <li>• <u>Practical Strategies for Strengthening Your Students’ Learning of Algebra Concepts (Grades 7-12)</u>, Bureau of Education &amp; Research, 2007</li> <li>• Manipulatives</li> <li>• Posters</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of homework</li> <li>• Board work</li> <li>• Participation in class activities</li> <li>• Answering questions during class work</li> <li>• Quizzes</li> <li>• Notebook quizzes</li> <li>• Speed drills</li> <li>• Mid-chapter test</li> <li>• Final test</li> </ul>

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**Unit 4: Factors, Fractions, and Exponents**

3 Weeks

PA; 1, 2, 3, 4, 9

**Biblical Worldview Essential Questions**

**How do fractions help accurately describe the real-life consistencies God created?**

**Why do we need different notations to express God's creation?**

**How can the useful tool of exponents help us to describe God's creation?**

**Can math be applied such that it leads to inaccurate conclusions that do not honor God?**

**How does scientific notation remind us of the enormity and complexity of God's creation?**

**How can we grow exponentially in God's grace?**

<b>Objectives</b>	<b>Methods</b>	<b>Resources</b>	<b>Assessment</b>
The students will 9. find greatest common factors 10. find least common multiples 11. identify equivalent fractions 12. write fractions in simplest form 13. use rules of exponents 14. use scientific notation	<ul style="list-style-type: none"> <li>• teacher lecture</li> <li>• teacher working examples on the board</li> <li>• teacher showing problems on overhead projector</li> <li>• student guided practice of problems in book</li> <li>• student taking notes</li> <li>• cooperative learning groups</li> <li>• individual assistance</li> <li>• partner work</li> <li>• worksheets</li> <li>• homework</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Pre-Algebra</u>, McDougal Littell, 2005</li> <li>• <u>Algebra with Pizzazz!</u>, Books A, B, C, and D, Creative Publications, 1989</li> <li>• <u>Practical Strategies for Strengthening Your Students' Learning of Algebra Concepts (Grades 7-12)</u>, Bureau of Education &amp; Research, 2007</li> <li>• Manipulatives</li> <li>• Posters</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of homework</li> <li>• Board work</li> <li>• Participation in class activities</li> <li>• Answering questions during class work</li> <li>• Quizzes</li> <li>• Notebook quizzes</li> <li>• Speed drills</li> <li>• Mid-chapter test</li> <li>• Final test</li> </ul>

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**Unit 5: Rational Numbers and Equations**

2½ Weeks

PA: 1, 2, 3, 4, 9

**Biblical Worldview Essential Questions**

**What do these mathematical principles demonstrate about God?**

**How do these principles demonstrate God's orderliness?**

**How do these principles demonstrate God's precision?**

**How can objects be represented to help us understand the variety of God's creation?**

**How do numerical patterns link us to an infinite God?**

**How do steps in solving problems reflect God's character in solving life problems?**

**What are things that can create inequality in the Christian life?**

<b>Objectives</b>	<b>Methods</b>	<b>Resources</b>	<b>Assessment</b>
The students will 15. write fractions as decimals 16. write decimals as fractions 17. perform operations with fractions and mixed numbers 18. solve equations with rational numbers 19. solve inequalities with rational numbers	<ul style="list-style-type: none"> <li>• teacher lecture</li> <li>• teacher working examples on the board</li> <li>• teacher showing problems on overhead projector</li> <li>• student guided practice of problems in book</li> <li>• student taking notes</li> <li>• cooperative learning groups</li> <li>• individual assistance</li> <li>• partner work</li> <li>• worksheets</li> <li>• homework</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Pre-Algebra</u>, McDougal Littell, 2005</li> <li>• <u>Algebra with Pizzazz!, Books A, B, C, and D</u>, Creative Publications, 1989</li> <li>• <u>Practical Strategies for Strengthening Your Students' Learning of Algebra Concepts (Grades 7-12)</u>, Bureau of Education &amp; Research, 2007</li> <li>• Manipulatives</li> <li>• Posters</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of homework</li> <li>• Board work</li> <li>• Participation in class activities</li> <li>• Answering questions during class work</li> <li>• Quizzes</li> <li>• Notebook quizzes</li> <li>• Speed drills</li> <li>• Mid-chapter test</li> <li>• Final test</li> </ul>

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**Unit 6: Ratio, Proportion, and Probability**

**3 Weeks**

**PA: 1, 2, 3, 5, 8, 9**

**Biblical Worldview Essential Questions**

**How does this show math as an integral part of God's creation?**

**How do these mathematical principles reflect God's spiritual relationships?**

**How do these mathematical principles reflect God's spiritual processes?**

**Why do you think order, accuracy, precision, and balance are important to God?**

**How are these concepts utilized in daily life?**

**How can we use God's gift of the number system to understand the world and all created things?**

<b>Objectives</b>	<b>Methods</b>	<b>Resources</b>	<b>Assessment</b>
The students will 20. write and compare ratios and rates 21. write and solve proportions 22. find theoretical probabilities 23. find experimental probabilities	<ul style="list-style-type: none"><li>• teacher lecture</li><li>• teacher working examples on the board</li><li>• teacher showing problems on overhead projector</li><li>• student guided practice of problems in book</li><li>• student taking notes</li><li>• cooperative learning groups</li><li>• individual assistance</li><li>• partner work</li><li>• worksheets</li><li>• homework</li></ul>	<ul style="list-style-type: none"><li>• <u>Pre-Algebra</u>, McDougal Littell, 2005</li><li>• <u>Algebra with Pizzazz!, Books A, B, C, and D</u>, Creative Publications, 1989</li><li>• <u>Practical Strategies for Strengthening Your Students' Learning of Algebra Concepts (Grades 7-12)</u>, Bureau of Education &amp; Research, 2007</li><li>• Manipulatives</li><li>• Posters</li></ul>	<ul style="list-style-type: none"><li>• Completion of homework</li><li>• Board work</li><li>• Participation in class activities</li><li>• Answering questions during class work</li><li>• Quizzes</li><li>• Notebook quizzes</li><li>• Speed drills</li><li>• Mid-chapter test</li><li>• Final test</li></ul>

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**Unit 7: Percents**

3½ Weeks

PA: 1, 2, 3, 4, 9

**Biblical Worldview Essential Questions**

**How does this show math as an integral part of God’s creation?**

**How do these mathematical principles reflect God’s spiritual relationships?**

**How do these mathematical principles reflect God’s spiritual processes?**

**Why do you think order, accuracy, precision, and balance are important to God?**

**How are these concepts utilized in daily life?**

**How can we use God’s gift of the number system to understand the world and all created things?**

<b>Objectives</b>	<b>Methods</b>	<b>Resources</b>	<b>Assessment</b>
The students will 24. find and use equivalent decimals, fractions, and percents 25. use proportions and the percent equation to solve percent problems 26. solve problems involving percent of change	<ul style="list-style-type: none"> <li>• teacher lecture</li> <li>• teacher working examples on the board</li> <li>• teacher showing problems on overhead projector</li> <li>• student guided practice of problems in book</li> <li>• student taking notes</li> <li>• cooperative learning groups</li> <li>• individual assistance</li> <li>• partner work</li> <li>• worksheets</li> <li>• homework</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Pre-Algebra</u>, McDougal Littell, 2005</li> <li>• <u>Algebra with Pizzazz!, Books A, B, C, and D</u>, Creative Publications, 1989</li> <li>• <u>Practical Strategies for Strengthening Your Students’ Learning of Algebra Concepts (Grades 7-12)</u>, Bureau of Education &amp; Research, 2007</li> <li>• Manipulatives</li> <li>• Posters</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of homework</li> <li>• Board work</li> <li>• Participation in class activities</li> <li>• Answering questions during class work</li> <li>• Quizzes</li> <li>• Notebook quizzes</li> <li>• Speed drills</li> <li>• Mid-chapter test</li> <li>• Final test</li> </ul>

## Curriculum Guide for Pre-Algebra

### Unit 8: Linear Functions

4 Weeks

PA: 1, 2, 6, 9

#### Biblical Worldview Essential Questions

**What do mathematical principles demonstrate about God?**

**How do numerical patterns link us to an infinite God?**

**How can objects be represented to help us understand the variety of God's creation?**

**What do these concepts indicate about God's order?**

**How do these concepts demonstrate God's constancy?**

**How can slope compare with our relationship with God?**

<b>Objectives</b>	<b>Methods</b>	<b>Resources</b>	<b>Assessment</b>
The students will 27. represent and interpret relations and functions 28. write and graph linear equations in two variables 29. write and graph linear systems 30. write and graph linear inequalities	<ul style="list-style-type: none"><li>• teacher lecture</li><li>• teacher working examples on the board</li><li>• teacher showing problems on overhead projector</li><li>• student guided practice of problems in book</li><li>• student taking notes</li><li>• cooperative learning groups</li><li>• individual assistance</li><li>• partner work</li><li>• worksheets</li><li>• homework</li></ul>	<ul style="list-style-type: none"><li>• <u>Pre-Algebra</u>, McDougal Littell, 2005</li><li>• <u>Algebra with Pizzazz!, Books A, B, C, and D</u>, Creative Publications, 1989</li><li>• <u>Practical Strategies for Strengthening Your Students' Learning of Algebra Concepts (Grades 7-12)</u>, Bureau of Education &amp; Research, 2007</li><li>• Manipulatives</li><li>• Posters</li></ul>	<ul style="list-style-type: none"><li>• Completion of homework</li><li>• Board work</li><li>• Participation in class activities</li><li>• Answering questions during class work</li><li>• Quizzes</li><li>• Notebook quizzes</li><li>• Speed drills</li><li>• Mid-chapter test</li><li>• Final test</li></ul>



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**Unit 9: Real Numbers and Right Triangles**

**2 Lessons**

**PA: 1, 2, 3, 7, 9**

**Biblical Worldview Essential Questions**

What geometric shapes do you see in nature?

How does geometry reveal God?

Are shapes in nature purposeful?

How does the study of geometrical principles help us to better understand God's creation?

How does man use shapes?

How is symmetry reflected throughout God's creation?

<b>Objectives</b>	<b>Methods</b>	<b>Resources</b>	<b>Assessment</b>
The students will 31. use square roots to solve problems 32. use the Pythagorean theorem to solve problems 33. identify rational and irrational numbers 34. use special right triangles to solve problems 35. use trigonometric ratios to solve problems	<ul style="list-style-type: none"> <li>• teacher lecture</li> <li>• teacher working examples on the board</li> <li>• teacher showing problems on overhead projector</li> <li>• student guided practice of problems in book</li> <li>• student taking notes</li> <li>• cooperative learning groups</li> <li>• individual assistance</li> <li>• partner work</li> <li>• worksheets</li> <li>• homework</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Pre-Algebra</u>, McDougal Littell, 2005</li> <li>• <u>Algebra with Pizzazz!, Books A, B, C, and D</u>, Creative Publications, 1989</li> <li>• <u>Practical Strategies for Strengthening Your Students' Learning of Algebra Concepts (Grades 7-12)</u>, Bureau of Education &amp; Research, 2007</li> <li>• Manipulatives</li> <li>• Posters</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of homework</li> <li>• Board work</li> <li>• Participation in class activities</li> <li>• Answering questions during class work</li> <li>• Quizzes</li> <li>• Notebook quizzes</li> <li>• Speed drills</li> <li>• Mid-chapter test</li> <li>• Final test</li> </ul>

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**Unit 10: Measurement, Area and Volume**

**2 Weeks**

**PA: 1, 2, 7, 9**

**Biblical Worldview Essential Questions**

**What does this reveal about God?**

**How does measurement help us fulfill God's plan?**

**What do the attributes of measurement reveal about God?**

**How can we show honor to God by being faithful and accurate in our measurements?**

**How do shapes and their parts help us appreciate God's creation?**

<b>Objectives</b>	<b>Methods</b>	<b>Resources</b>	<b>Assessment</b>
The students will 36. find angle measures and side lengths of triangles 37. find angle measure and side lengths of quadrilaterals 38. find the area of parallelograms 39. find the area of trapezoids 40. find the area of circles 41. find the surface areas of prisms, cylinders, pyramids and cones 42. find the volumes of prisms, cylinders, pyramids, and cones	<ul style="list-style-type: none"><li>• teacher lecture</li><li>• teacher working examples on the board</li><li>• teacher showing problems on overhead projector</li><li>• student guided practice of problems in book</li><li>• student taking notes</li><li>• cooperative learning groups</li><li>• individual assistance</li><li>• partner work</li><li>• worksheets</li><li>• homework</li></ul>	<ul style="list-style-type: none"><li>• <u>Pre-Algebra</u>, McDougal Littell, 2005</li><li>• <u>Algebra with Pizzazz!</u>, <u>Books A, B, C, and D</u>, Creative Publications, 1989</li><li>• <u>Practical Strategies for Strengthening Your Students' Learning of Algebra Concepts (Grades 7-12)</u>, Bureau of Education &amp; Research, 2007</li><li>• Manipulatives</li><li>• Posters</li></ul>	<ul style="list-style-type: none"><li>• Completion of homework</li><li>• Board work</li><li>• Participation in class activities</li><li>• Answering questions during class work</li><li>• Quizzes</li><li>• Notebook quizzes</li><li>• Speed drills</li><li>• Mid-chapter test</li><li>• Final test</li></ul>

## Curriculum Guide for Pre-Algebra

### Unit 11: Data Analysis and Probability

2 Weeks

PA: 1, 2, 5, 9

#### Biblical Worldview Essential Questions

**How is Math being misused or abused?**

**What do numbers represent and how do they help us order things in God's world?**

**How can objects be represented to help us understand the variety of God's creation?**

**How can we quantify our findings in a way that pleases God?**

**How can change be represented mathematically?**

**How are patterns used to make discoveries about God's creation/world?**

Objectives	Methods	Resources	Assessment
The students will 43. make and interpret data displays 44. conduct surveys and analyze survey results 45. calculate probabilities of events	<ul style="list-style-type: none"><li>• teacher lecture</li><li>• teacher working examples on the board</li><li>• teacher showing problems on overhead projector</li><li>• student guided practice of problems in book</li><li>• student taking notes</li><li>• cooperative learning groups</li><li>• individual assistance</li><li>• partner work</li><li>• worksheets</li><li>• homework</li></ul>	<ul style="list-style-type: none"><li>• <u>Pre-Algebra</u>, McDougal Littell, 2005</li><li>• <u>Algebra with Pizzazz!, Books A, B, C, and D</u>, Creative Publications, 1989</li><li>• <u>Practical Strategies for Strengthening Your Students' Learning of Algebra Concepts (Grades 7-12)</u>, Bureau of Education &amp; Research, 2007</li><li>• Manipulatives</li><li>• Posters</li></ul>	<ul style="list-style-type: none"><li>• Completion of homework</li><li>• Board work</li><li>• Participation in class activities</li><li>• Answering questions during class work</li><li>• Quizzes</li><li>• Notebook quizzes</li><li>• Speed drills</li><li>• Mid-chapter test</li><li>• Final test</li></ul>

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**Unit 12: Polynomials and Nonlinear Functions**

**3 Weeks**

**PA: 1, 2, 3, 9**

**Biblical Worldview Essential Questions**

**What do these mathematical principles demonstrate about God?**

**How do these principles demonstrate God's orderliness?**

**How do these principles demonstrate God's precision?**

**How can objects be represented to help us understand the variety of God's creation?**

**How does this concept reflect God's dependability?**

<b>Objectives</b>	<b>Methods</b>	<b>Resources</b>	<b>Assessment</b>
The students will 46. add polynomials 47. subtract polynomials 48. multiply polynomials 49. evaluate powers of products, quotients, and powers 50. graph quadratic functions 51. graph exponential functions	<ul style="list-style-type: none"> <li>• teacher lecture</li> <li>• teacher working examples on the board</li> <li>• teacher showing problems on overhead projector</li> <li>• student guided practice of problems in book</li> <li>• student taking notes</li> <li>• cooperative learning groups</li> <li>• individual assistance</li> <li>• partner work</li> <li>• worksheets</li> <li>• homework</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Pre-Algebra</u>, McDougal Littell, 2005</li> <li>• <u>Algebra with Pizzazz!, Books A, B, C, and D</u>, Creative Publications, 1989</li> <li>• <u>Practical Strategies for Strengthening Your Students' Learning of Algebra Concepts (Grades 7-12)</u>, Bureau of Education &amp; Research, 2007</li> <li>• Manipulatives</li> <li>• Posters</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of homework</li> <li>• Board work</li> <li>• Participation in class activities</li> <li>• Answering questions during class work</li> <li>• Quizzes</li> <li>• Notebook quizzes</li> <li>• Speed drills</li> <li>• Mid-chapter test</li> <li>• Final test</li> </ul>